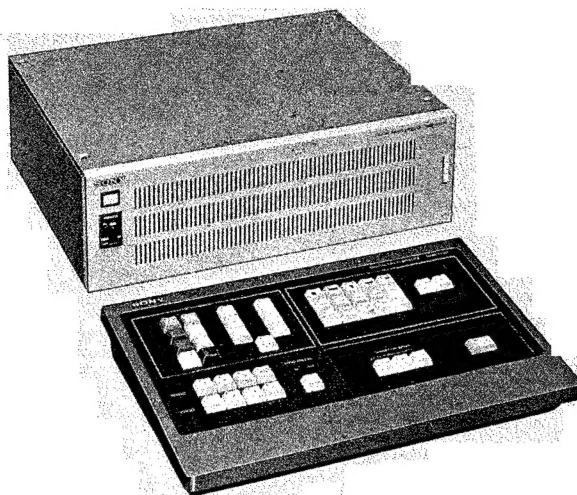


DME-450P



SPECIFICATIONS

Signal system	PAL color system	Crosstalk (4.43 MHz)	Less than - 52 dB
INPUT SIGNALS		Frequency response	300 kHz to 5.5 MHz \pm 0.5 dB (BKGD bus)
VIDEO IN 1-3	BNC type (3) 1.0 Vp-p (VBS), 75 ohms	(1 MHz reference)	300 kHz to 2.0 MHz \pm 1.0 dB (FRGD bus)
COMPONENT IN (BETACAM)	12-pin (1) Luminance Y: 1.0 Vp-p, 75 ohms Chrominance R-Y/B-Y: 0.525 Vp-p (100/0/75/0 color bars), 75 ohms	S/N	Over 56 dB (BKGD bus)
		Effect system	284 preset effects 5 transition speeds 2 field memories (454 \times fH sampling frequency)
OUTPUT SIGNALS		GENERAL	
PGM OUT	BNC type (2) 1.0 Vp-p (VBS), 75 ohms	Power requirement	220 V to 240 V AC, 50/60 Hz
COMPONENT OUT (BETACAM)	12-pin (1) Luminance Y: 0.70 Vp-p (without sync) 75 ohms Chrominance R-Y/B-Y: 0.525 Vp-p (100/0/75/0 color bars), 75 ohms	Operating voltage	180 V to 264 V AC, 48 Hz to 63 Hz
KEY OUT	BNC type (1) 1.0 Vp-p, 75 ohms	Power consumption	70 W
SYNC OUT	BNC type (3) 2.0 \pm 0.5 Vp-p, 75 ohms	Operating temperature	0 °C to 40 °C (32 °F to 104 °F)
CONTROL SIGNALS		Dimensions (w/h/d)	Control panel: 390 \times 62 \times 264 mm (15 ³ / ₈ \times 2 ¹ / ₂ \times 10 ¹ / ₂ inches)
Interfaces	BVS-3000 series video switcher: 9-pin remote Editor: BNC type (CUE/T1,T2) 9-pin remote Control panel: 25-pin remote	Weight	Main unit: 424 \times 132 \times 350 mm (16 ³ / ₄ \times 5 ¹ / ₄ \times 13 ⁷ / ₈ inches) Control panel: 3 kg (6 lb 10 oz) Main Unit: 11 kg (24 lb 5 oz) (with cables)
PERFORMANCE		Design and specifications are subject to change without notice.	
DP (10 to 90% APL)	Less than 2° (BKGD bus) Less than 3° (FRGD bus)		
DG (10 to 90% APL)	Less than 2% (BKGD bus) Less than 6% (FRGD bus)		

SONY
SERVICE MANUAL

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

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SECTION 1

GENERAL DESCRIPTION

1-1. INTRODUCTION

The DME-450P digital multi effects is a small video switcher capable of creating a variety of digital multi-effects without using a time base corrector (TBC).

Additional special effects are also possible when it is used with an editing control unit, video cameras, VCRs, and character generators. This unit particularly meets the needs of the operator who is using a video switcher for the first time, and it matches the simple production needs of a school or office.

1-1-1. Features

- **Effects without using a TBC**

A TBC is generally required for electronic editing with effects. By means of two sets of built-in field memories, you do not need to use the TBC. You can edit video materials and use effects even when those materials are supplied from VCRs such as Umatic VCRs.

- **Digital multi-effects (DME)**

Cut, mix, wipe (five typical wipe patterns) and DME patterns including tumble, flip, slide and scroll can be selected simply by pressing the respective buttons. In addition, the DME-450P has 117 DME patterns and 156 wipe patterns. Four patterns which are used frequently can be registered in the USER 1 to 4 buttons and can be recalled quickly by pressing the USER button. A border can be added to an effect.

- **Input and output connectors which meet needs for simple editing**

The input connectors are for:

- Three primary source inputs

- (In addition to these, the signal generated by the built-in color background generator can be used as an input source.)

- One component signal input of the Betacam format

The output connectors are for:

- Two program outputs

- One component output with special effects

- (This signal is to be used for a BVS-3000 series video switcher.)

- One key output

- Three sync outputs

Other connectors are for:

- Interface input/output for editing control units and BVS-3000 series video switcher

- **Effects even in two-VCR editing**

Electronic editing with effects generally can be made by using A/B roll editing. Using the DME-450P series with digital multi-effects, you can edit using only two VCRs, a recorder and a player. Electronic A/B roll editing using a recorder and two players is, of course, possible.

- **Serial interface with editing control units**

Two-VCR editing is possible using this unit together with an RM-450 editing control unit.

A/B roll editing can be controlled from a BVE-600 editing control unit with the T1 and T2 control signals and from a BVE-900 through the RS-422 serial interface.

This unit can be a combination switcher when it is used together with a BVS-3000 series video switcher.

- **Rack mounting**

The unit can be mounted on an EIA standard 19-inch rack.

1-1-2. Precautions

- **On safety**

The DME-450P should be operated on 220 to 240 V AC, 50/60 Hz.

Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.

Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect a cord, pull it out while holding the plug. Never pull the cord itself.

- **On installation**

Allow adequate air circulation to prevent internal heat buildup. Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slot.

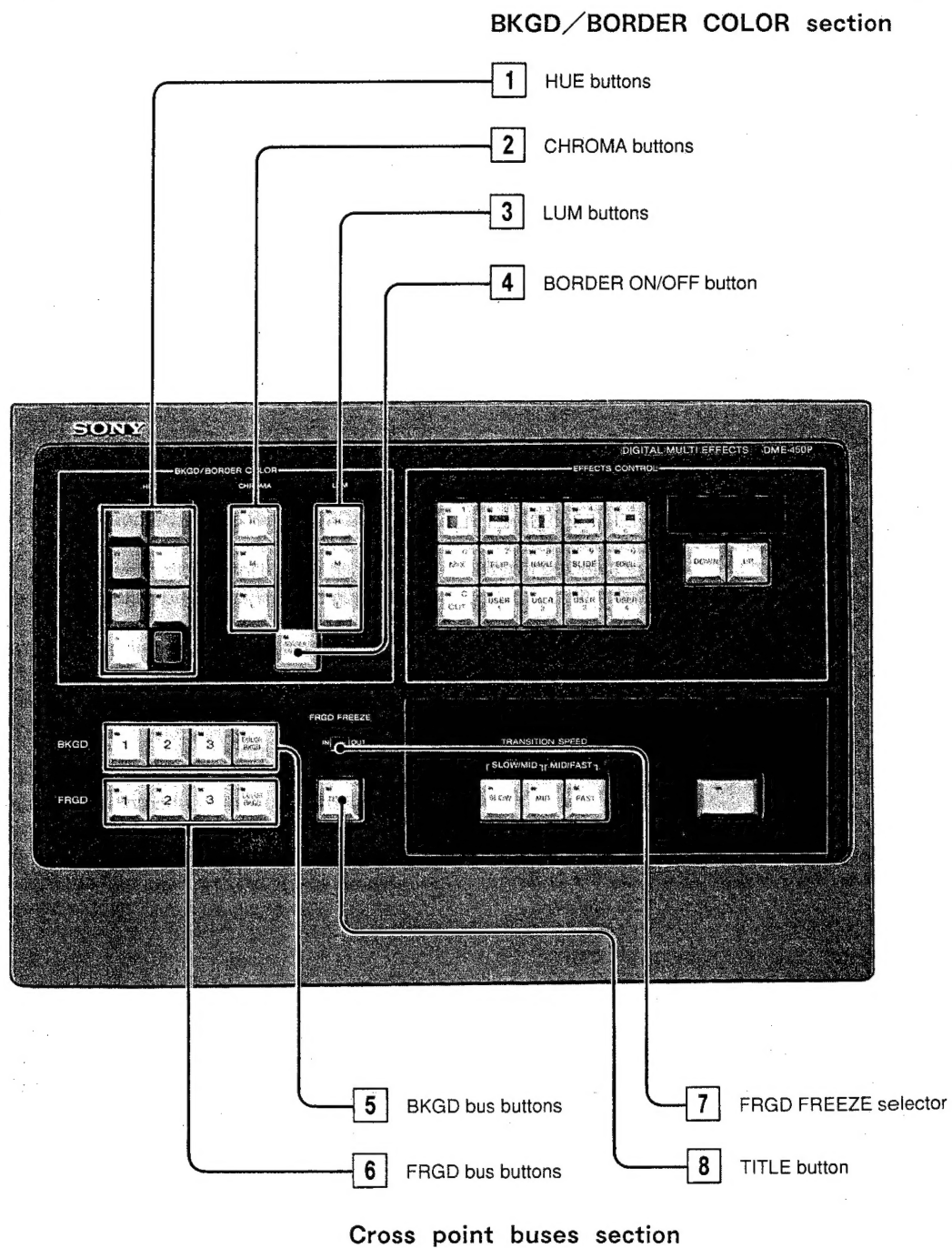
Do not install the unit near heat sources such as radiators or air ducts or where it is subject to mechanical vibration or shock.

- **On cleaning**

Clean the cabinet, panel and control with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent such as alcohol or benzine which may damage the finish.

1-2. LOCATION AND FUNCTIONS OF PARTS AND CONTROLS

1-2-1. Control Panel



• BKGD/BORDER COLOR section

This section selects the background and border colors.

1 HUE buttons

Select the hue of the background and border colors among black, white, red, green, blue, magenta, yellow, and cyan. When selecting the hue of the background color, the lamp on the BORDER ON/OFF button 4 should go out. If the lamp is on, press the BORDER ON/OFF button so that the lamp goes out.

To select the hue of the border color, press the BORDER ON/OFF button so that the lamp on the button lights up, and then select the hue desired. The background and border colors can be selected independently.

2 CHROMA (chrominance) buttons

Select the chrominance level of the background and border colors.

Select one of the three: H (for high level), M (for middle level) and L (for low level).

The chrominance level of the background and border colors can be selected independently.

3 LUM (luminance) buttons

Select the luminance level of the background and border colors.

Select one of the three: H (for high level), M (for middle level) and L (for low level).

The luminance level of the background and border colors can be selected independently.

4 BORDER ON/OFF button

Selects whether or not to add the border to the effects.

To add the border to the effect, press this button so that the lamp on the button lights up. Every time you press this button, the lamp lights up and goes out in turn.

• Cross point buses section

Selects the picture before and after executing an effect.

5 BKGD (background) bus buttons

Select the picture which will appear after a special effect such as cut, mix, wipe, or digital multi effect ends.

Buttons 1 to 3 respectively correspond to the VIDEO IN 1 to 3 connectors on the connector panel. By pressing one of these buttons, the corresponding input signal is selected. By pressing the COLOR BKGD button, the background color, which was set at the BKGD/BORDER COLOR section, is selected.

When the BKGD bus signal is output from the PGM OUT connectors, "BKGD" beside the bus buttons row will light up.

6 FRGD (foreground) bus buttons

Select the picture which appears before a special effect such as cut, mix, wipe, or digital multi effect starts.

Buttons from 1 to 3 respectively correspond to the VIDEO IN 1 to 3 connectors on the connector panel. By pressing one of these buttons, the corresponding input signal is selected. By pressing the COLOR BKGD button, the background color, which was set at the BKGD/BORDER COLOR section, is selected.

When the FRGD bus signal is output from the PGM OUT connectors, "FRGD" beside the bus buttons row will light up.

7 FRGD FREEZE (foreground freeze) selector

Determines whether or not to freeze the FRGD bus picture when executing mix, wipe, or digital multi-effects.

IN: freezes the FRGD bus picture

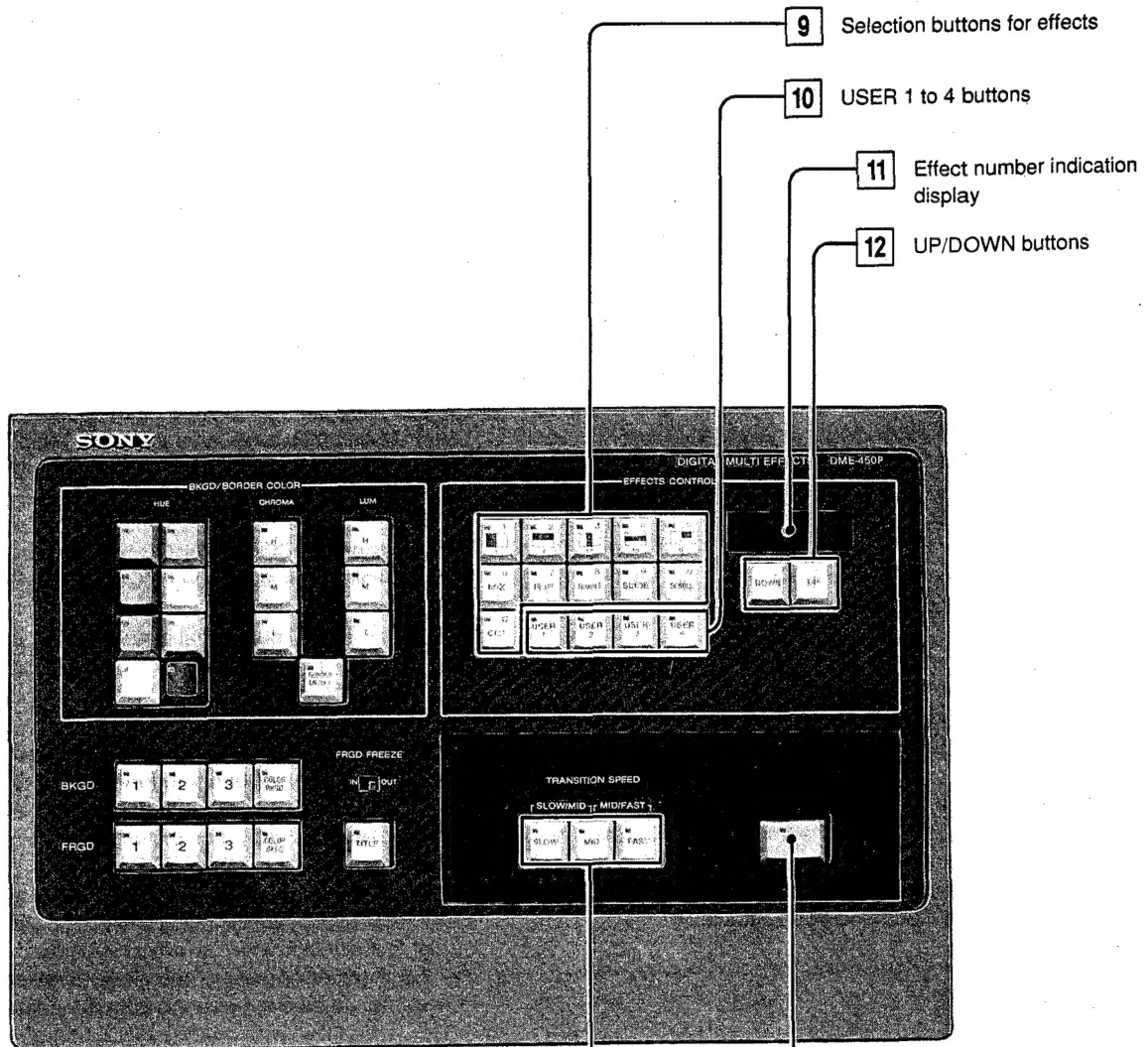
OUT: does not freeze the FRGD bus picture

- For editing using only two VCRs (with the RM-450), the FRGD bus picture will be frozen regardless of the setting of this selector when an effect is performed.
- For A roll editing using one player with the BVE-600 series, be sure to have this selector set to IN all the time.

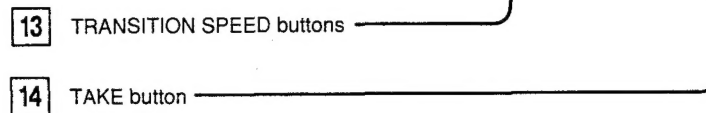
8 TITLE button

Superimposes the FRGD bus characters on the BKGD bus picture. Digital multi-effect can be applied to the characters. Press the TITLE button while holding down the FRGD bus button which corresponds to the character signal.

EFFECTS CONTROL section



Effects transition section



• EFFECTS CONTROL section

Selects the effect to be performed.

9 Selection buttons for effects

(wipe) buttons

Select the wipe effect, which changes one picture to another with a wipe pattern moving across the screen. Press the desired wipe effect pattern button out of five typical preset wipe patterns.

MIX button

Selects the mix effect in which a FRGD bus picture dissolves into a BKGD bus picture.

Digital multi-effect selection buttons

Select four preset DME patterns: FLIP, TUMBLE, SLIDE or SCROLL.

CUT button

Selects the cut effect in which a FRGD bus picture is instantaneously changed to a BKGD bus picture.

10 USER 1 to 4 buttons

Used to assign any effects available on this unit to these buttons so that you can quickly select the desired effects. Generally assign the effects you use frequently to these buttons.

The buttons having the numbers 0 through 9 on them **9** will be used to designate the effect numbers desired.

While keeping one of the USER 1 to 4 buttons pressed, enter a 4-digit number of the effect desired by using buttons with numbers 0 through 9 or UP/DOWN buttons. To clear the entered numbers, press the C button while keeping the USER button pressed.

11 Effect number indication display

Displays the effect number in four digits.

12 UP/DOWN buttons

Used to search for the effect number.

The effect number shown on the effect number indication display increases or decreases when you press once.

When you hold down the UP button, the number increases continuously. When you hold down the DOWN button, the number decreases continuously. These are activated while one of the USER 1 to 4 buttons is pressed.

• Effects transition section

Sets the transition duration for which the picture is changed from one to another, and executes the effect.

13 TRANSITION SPEED buttons

Select one of the durations listed below, which are appropriate for the selected effect transition.

SLOW button: about 3.2 seconds.

SLOW and MID buttons: about 1.6 seconds

MID button: about 1.0 seconds

MID and FAST buttons: about 0.8 seconds

FAST button: about 0.5 second

When SLOW, MID and FAST buttons are used in combination, the one button should be pressed and held down while pressing the other button.

14 TAKE button

Starts the effect transition.

When selecting a wipe or mix:

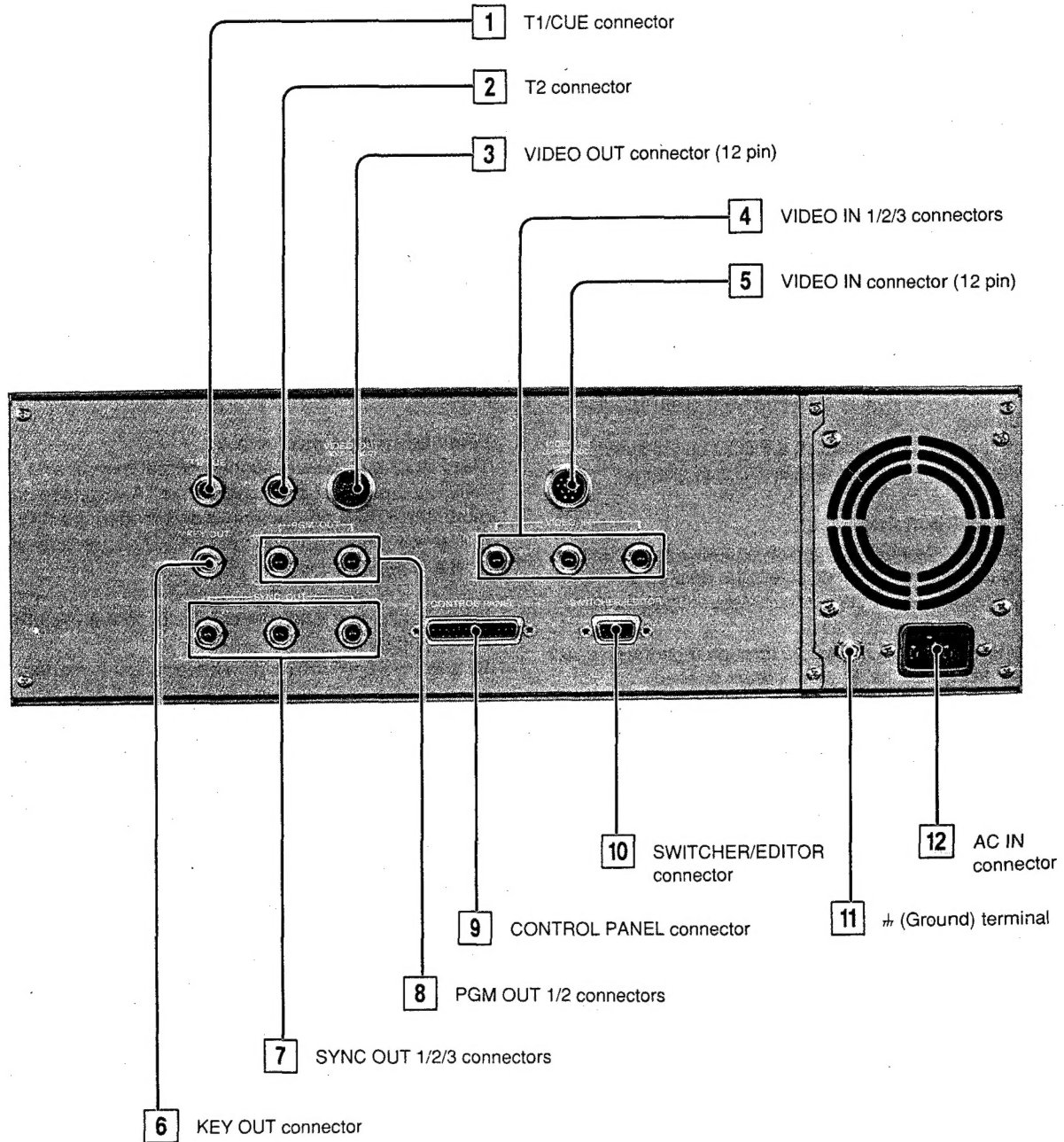
The FRGD bus picture signal is output by pressing the TAKE button once. By pressing the TAKE button once more, the FRGD bus picture is switched to the BKGD bus picture with effect and then the BKGD bus picture appears on the video monitor.

When selecting a DME pattern like picture-in-picture, static mirror and so on:

By pressing the TAKE button once, effect is started. By pressing the TAKE button once more, effect is completed and the BKGD bus picture appears on the video monitor again.

(The bus whose signal is effected and the transition duration depend on the effect selected. For details, see "Types of effects" on page 1-26.)

1-2-2. Main Unit



• Connector panel

1 T1/CUE connector (BNC type)

2 T2 connector

Input the trigger signal to start the effect for automatic editing.

For automatic editing using an RM-450, hook up the CUE connector of RM-450 to the T1/CUE connector.

For automatic editing using a BVE-600, hook up the T1 and T2 connectors of BVE-600 to the T1/CUE and T2 connectors.

3 VIDEO OUT connector (12-pin)

Outputs the component video signal with effects (Y/R-Y/B-Y without sync).

Connect to the KEY FILL INPUTS EFF EXT 1 connector (12-pin) of the BVS-3200CP video switcher.

4 VIDEO IN 1/2/3 connectors (BNC type)

Connect the video signals from video cameras, VCRs, etc. The signal fed into the connectors can be selected with the FRGD bus or BKGD bus buttons on the control panel.

When using this unit with the BVS-3000 series video switcher (which accepts the composite video signal), connect the VIDEO IN 1 connector to the KEY 1 BUS OUT connector (BNC type) and the VIDEO IN 3 connector to the AUX B.B connector of the BVS-3000 series video switcher.

5 VIDEO IN connector (12-pin)

Connect to the KEY 1 BUS OUT connector (12-pin) of the BVS-3200CP video switcher. The format of the signal at this connector is Y/R-Y/B-Y and black burst.

You cannot use both the signals as the FRGD bus picture; one is fed to this connector and the others are fed to the VIDEO IN 1/2/3 connectors. First, determine the signal you are going to use and then select it with the COMPOSITE/COMPONENT switch on the AD-44P board.

6 KEY OUT connector (BNC type)

Outputs the key signal which is the frame signal corresponding to the picture effected. When the TITLE button is on (the lamp on the TITLE button is lit) and the characters are selected, the key signal which is the character (title) is output from this connector. When using this unit with the BVS-3000 series video switcher, connect this connector to the KEY SOURCE INPUTS EFF EXT KEY 1 connector.

7 SYNC OUT 1/2/3 connectors (BNC type)

Output the internal composite sync signal or the signal fed to the VIDEO IN 3 connector. Connect to the external sync signal input connector of a VCR, etc. Select either the internal or external sync signal with the INT SYNC/EXT REF switch on the AD-44P board.

8 PGM OUT 1/2 connectors (BNC type)

Output the program video signals with effects. The signals output from both connectors are the same. Connect to the VCRs and video monitors. To use with the BVS-3000 series video switcher(excluding BVS-3200CP), connect it to the KEY FILL INPUTS EFF EXT 1 connector.

9 CONTROL PANEL connector

Connect to the control panel of the DME-450P with the 25-pin control cable supplied.

10 SWITCHER/EDITOR connector

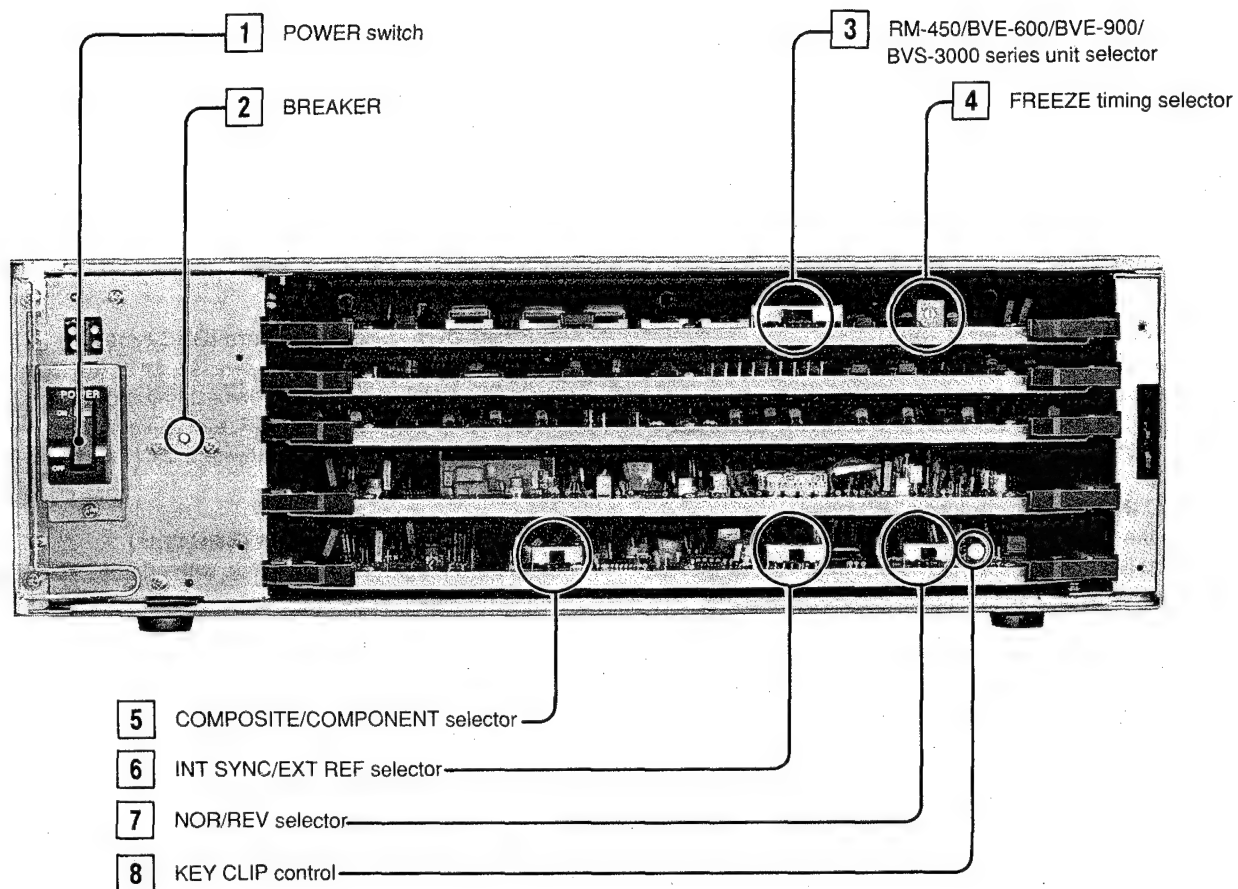
Use this connector to use with the BVS-3000 series video switcher or the BVE-900 series editing control unit. Connect to the VIDEO SW'ER connector using the 9-pin remote control cable to use with the BVE -900. Connect to the DME-450 connector using the 9-pin remote control cable to use with the BVS-3000 series video switcher.

11 \varnothing (ground) terminal

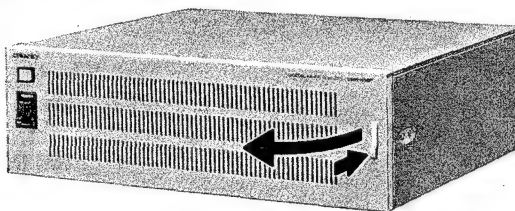
Connect to the ground bus if necessary.

12 AC IN connector

Connect to an AC power source with the AC power cord supplied.



How to open the front panel



• Notes

Be sure to turn off the POWER switch before opening the front panel and touching the internal circuit boards.

• Front panel/Internal circuit boards

1 POWER switch

Press the ON side to turn the unit on. The lamp above the switch lights up and the buttons on the control panel are set to the initial status with their corresponding lamps being lit. Press the OFF side to turn the unit off.

2 BREAKER

Cuts the primary AC power when excessive current flows and the green protuberance pops up. Check and repair the unit first, and then press this green protuberance to reset.

3 RM-450/BVE-600/BVE-900/BVS-3000 series unit selector

Selects the appropriate unit to be connected. The DME-450P can be controlled from the connected equipment as well as from its own controller. The selector is factory-set to the position which selects the BVE-600.

• Notes

- When this selector is set to RM-450, the FRGD picture is frozen while executing the effect. In order not to freeze the picture, be sure to set this switch to BVE-600 or BVE-900.
- Be certain to turn off the POWER switch when changing the position of this selector. Note that the switching operation is not effective if the selector position is changed with the POWER switch set to ON.

4 FREEZE timing selector

Adjust the timing of the FREEZE IN point of the FRGD bus picture for the IN point when editing and using the RM-450. By turning this selector in the + direction (F, E...8), the timing of the FREEZE IN point is delayed. By turning this selector in the - direction (1, 2...7), the timing of the FREEZE IN point advances. The timing can be adjusted from the -7 to +8 fields at 1 field step.

This selector is factory-set to 0.

5 COMPOSITE/COMPONENT selector

Selects the format of the input signal used as FRGD bus input.

COMPOSITE: Select this position when using the signal which is supplied to one of the VIDEO IN 1/2/3 connectors as the input source.

COMPONENT: Select this position when using the signal which is supplied to the VIDEO IN (12-pin) connector as the input source (when using with the BVS-3200CP video switcher).

This selector is factory-set to COMPOSITE.

6 INT SYNC/EXT REF (internal sync/external reference) selector

Selects the reference signal for the system.

INT SYNC: Select this position when all the video units connected to the VIDEO IN connectors are capable of locking to the external sync signal.

EXT REF: When one or more connected video units are not capable of locking to the external synch signal, set the selector to this position.

Select one of the units (which has no external sync input connector) as the reference feeder, and feed the video signal output from that unit to the VIDEO IN 3 connector. In this case, this signal is output from the SYNC OUT connectors as the reference signal for the other units.

This selector is factory-set to INT SYNC.

• Notes

The DME-450P is designed so that the input signal to the VIDEO IN 3 connector will be also used as the external reference video signal when this selector is set to EXT REF. Thus, be sure to feed the video signal which is to be used as the reference video signal to the VIDEO IN 3 connector.

7 NOR/REV (normal/reverse) selector

To be set depending on the characters to be superimposed, when you press the TITLE button to superimpose the FRGD bus characters on the BKGD bus picture.

NOR: Select this position when the characters are white on the black background.

REV: Select this position when the characters are black on the white background.

This selector is factory-set to NOR.

8 KEY CLIP control

Adjusts the key level for the character signal when you press the TITLE button to superimpose the FRGD bus characters on the BKGD bus picture.

1-3. CONNECTIONS

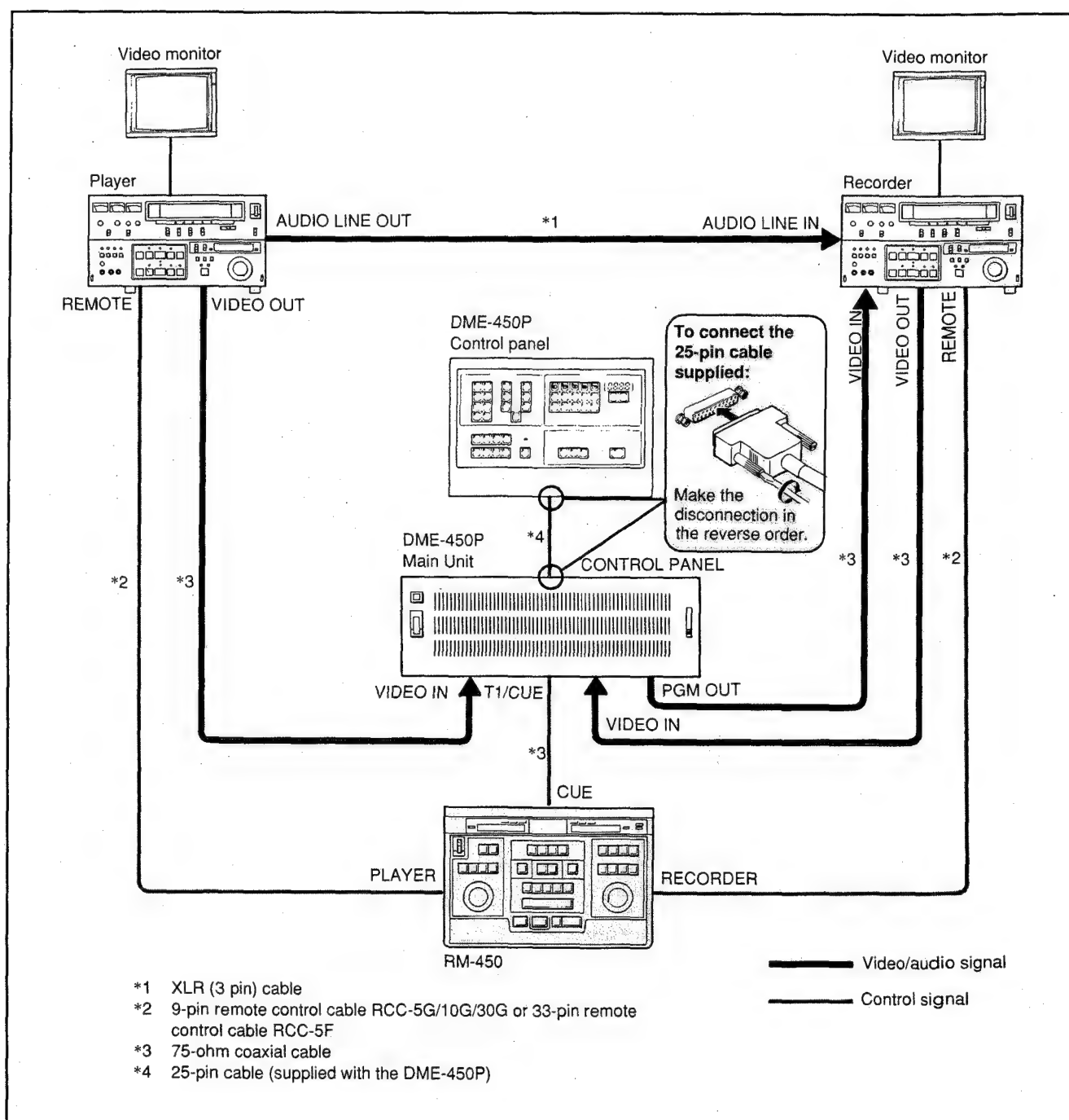
This section describes connections for the A roll editing system using two VCRs (one player and one recorder), the A/B roll editing system and the editing system using the

video switcher.

For the system connections for synchronizing, see “System connections for synchronizing” on page 1-14.

1-3-1. Two-VCR Editing System

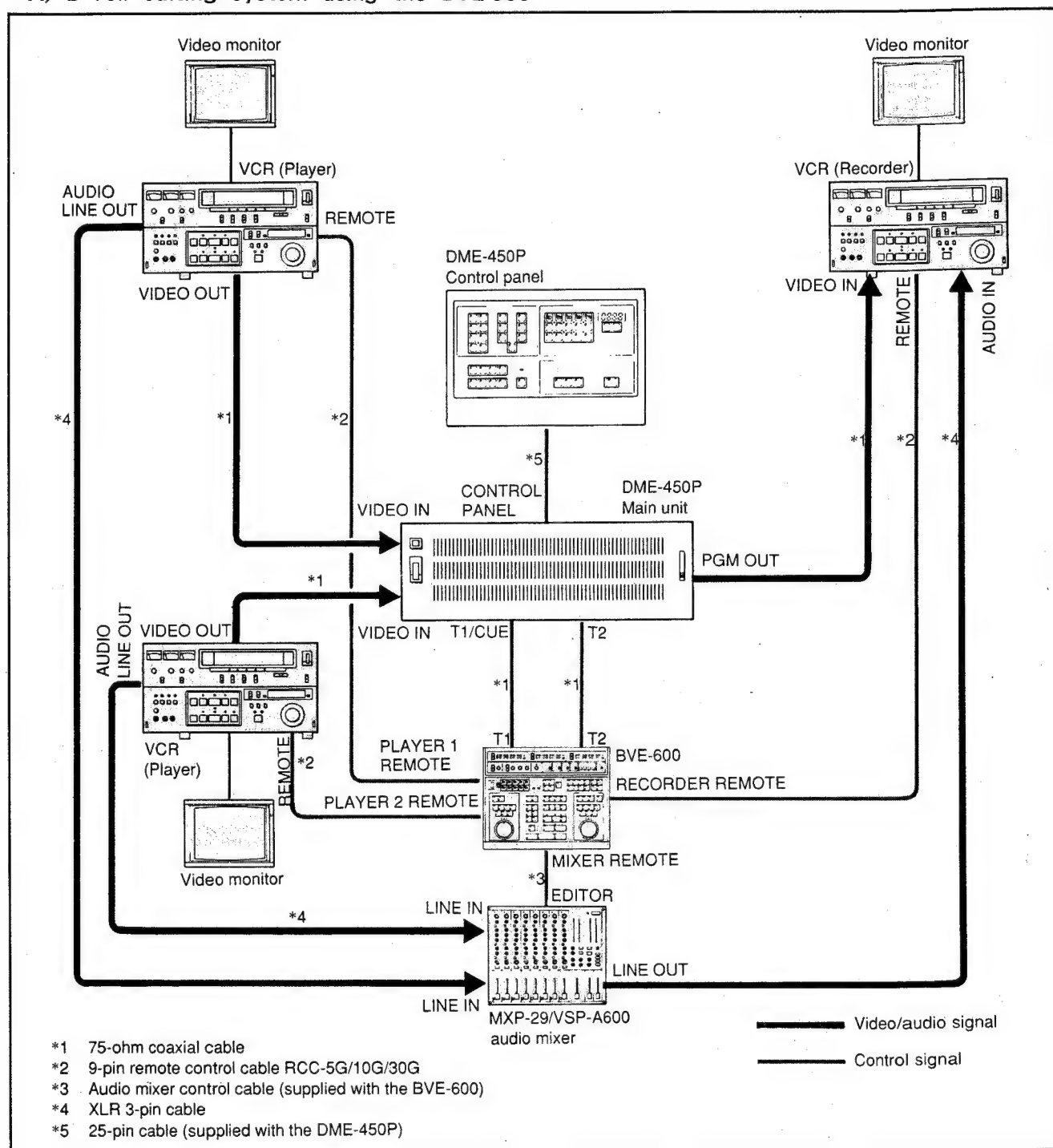
Using this unit with the RM-450 editing control unit allows the two-VCR editing system with one player and one recorder.



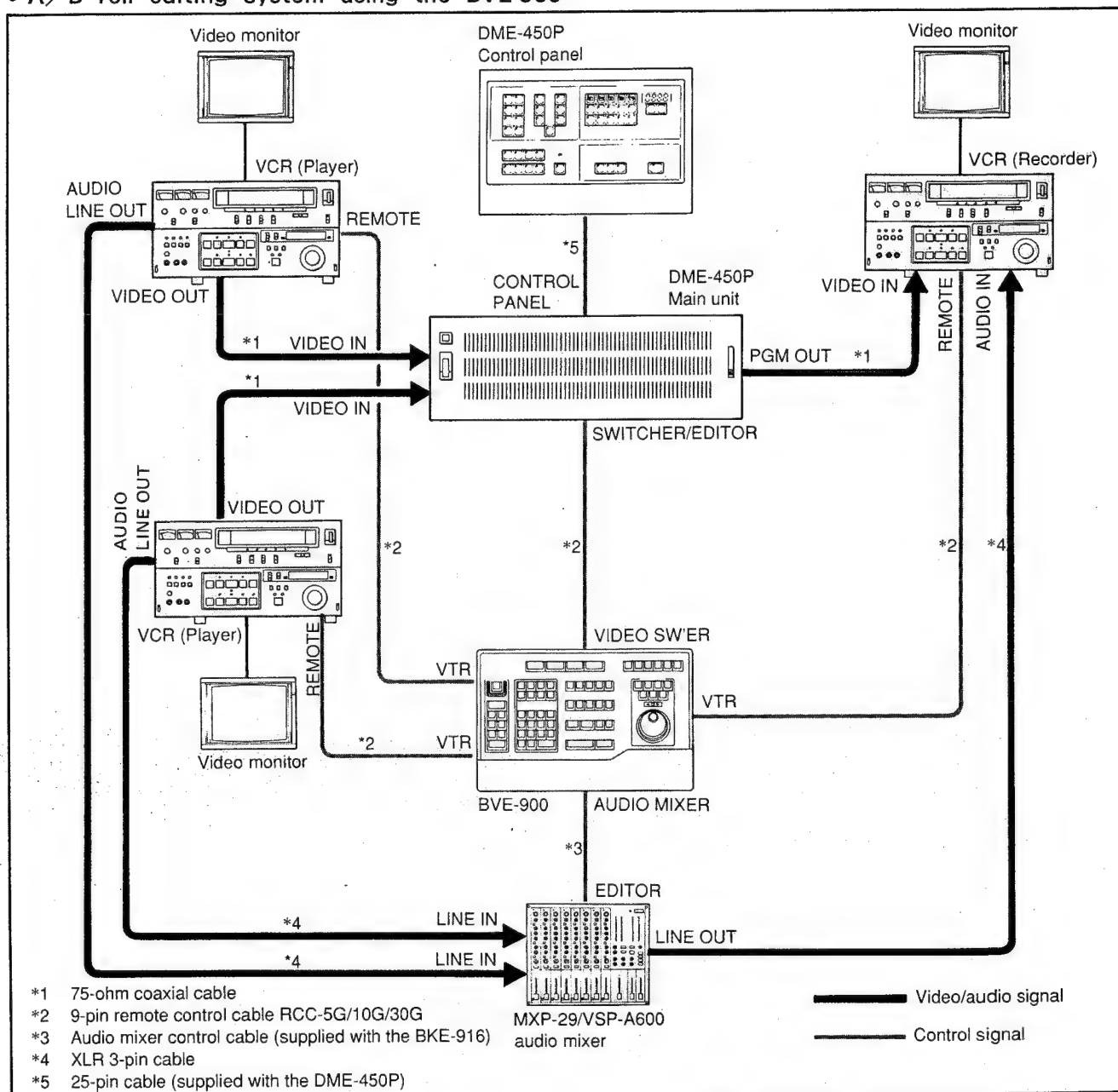
1-3-2. A/B Roll Editing System

Using this unit with the BVE-600/900 editing control unit allows an A/B roll editing system with two players and one recorder.

• A/B roll editing system using the BVE-600



• A/B roll editing system using the BVE-900



• Notes

The optional interface boards should be installed in the BVE-900 to connect the BVE-900, VCR, MXP-29 and DME-450P. For details, refer to the operation manual for the BVE-900.

A roll editing with the BVE-900

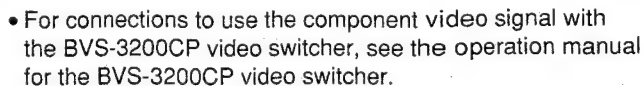
When editing using a BVE-900, and a player and a recorder with the DME-450P, disconnect the SWITCHER/EDITOR connector on the DME-450P and VIDEO SW'ER (9P)

connector on the BVE-900 in the above drawing and connect the T1/CUE and T2 connectors to the GPI-1 and GPI-2 connectors respectively.

• Note

You must set the FRGD FREEZE selector to IN (where the picture is frozen) when performing A roll editing using the BVE-900.

When using with the BVS-3000 series video switcher, the DME-450P effects can be controlled by the BVS-3000 series video switcher.



1-3-4. System Connections for Synchronizing

In order to obtain the normal picture signals when editing, all the units in the system — VCRs, video camera, character generator, etc., should be synchronized with each other. As the reference sync signals, the three listed in the table at right are available.

The connection examples for these three reference sync signals are described below.

Reference sync signal generated by the DME-450P

All the video units connected to the DME-450P should be capable of locking to the external sync.

Reference video signal generated by a connected unit

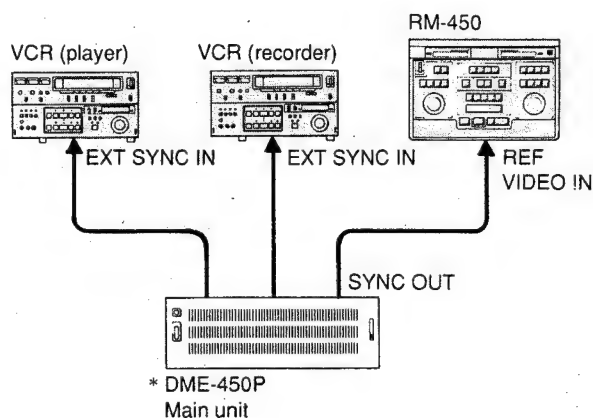
The reference video signal is supplied to other units without passing through the DME-450P.

Video signal generated by the unit having no external sync input connector

When one of the video units connected to the DME-450P has no external sync input connectors, it must be used as the reference sync feeder. Input the video signal output from that unit to the VIDEO IN 3 connector and set the INT SYNC/EXT REF selector on the internal circuit board to EXT REF. In this case, the signal input to the VIDEO IN 3 is output from the SYNC OUT connectors as the reference sync signal for other units.

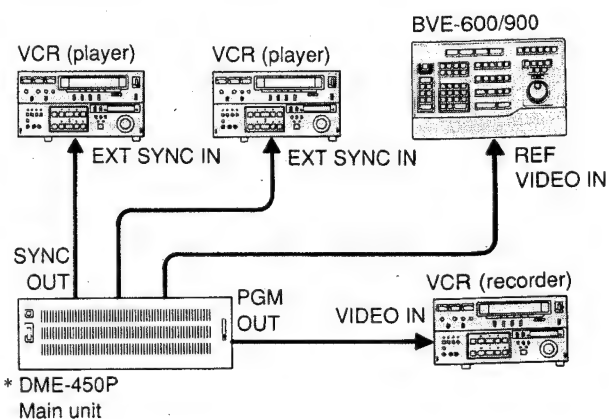
• Using the reference sync signal generated by the DME-450P

Two-VCR editing system using a player and a recorder



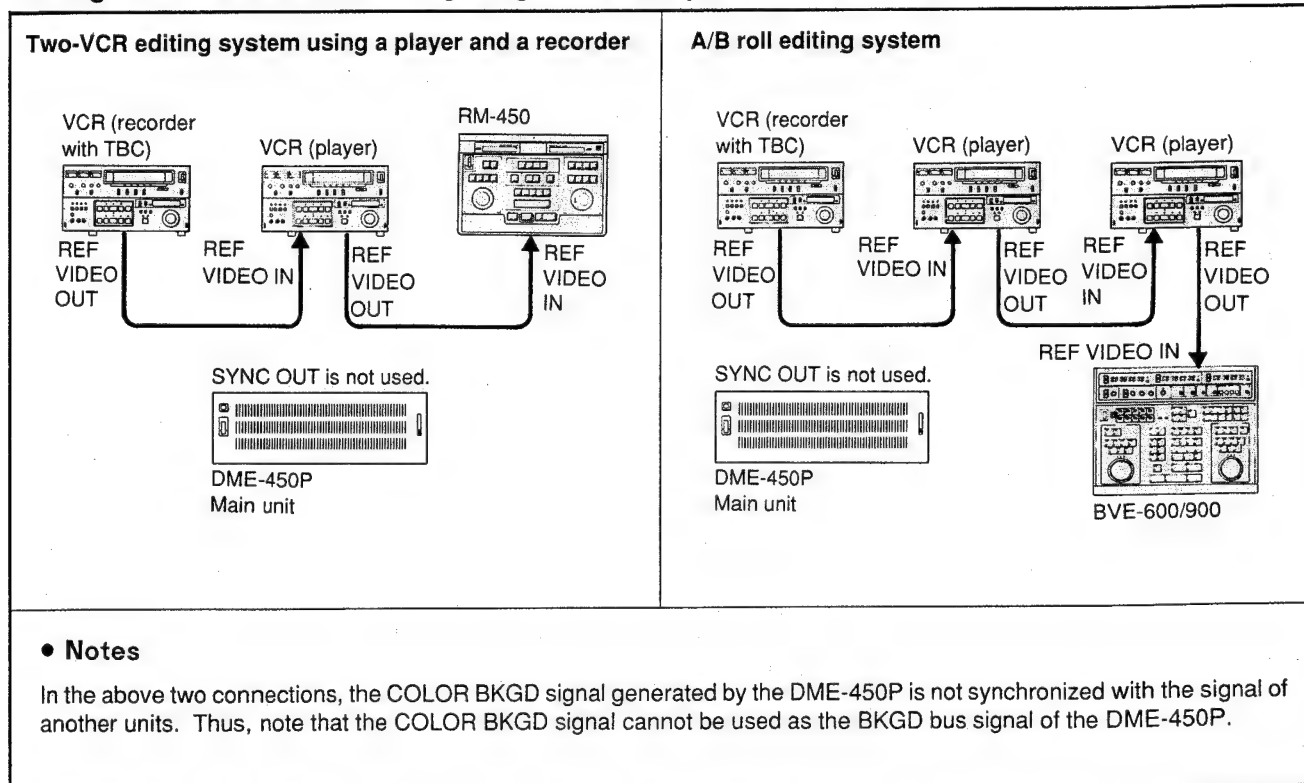
* Set INT SYNC/EXT REF selector on the AD-44P circuit board to INT SYNC.

A/B roll editing system

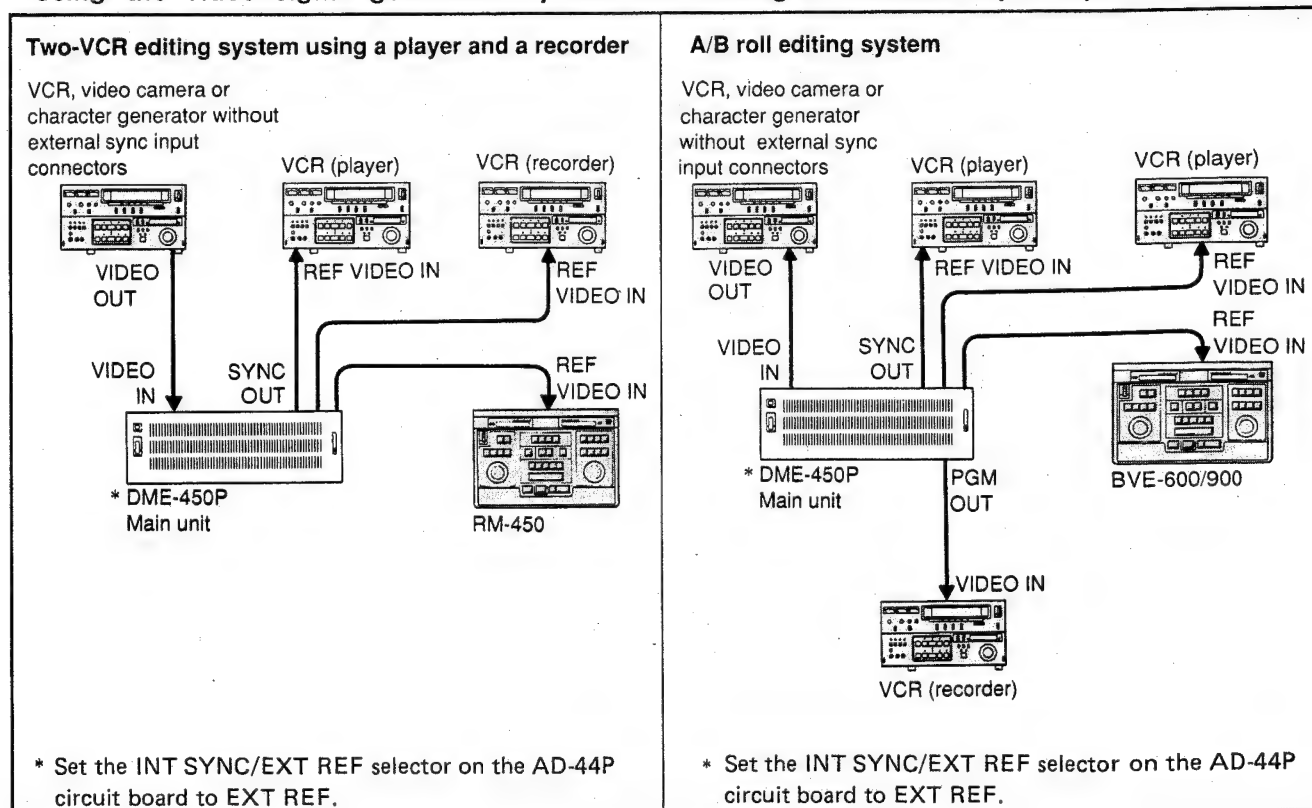


* Set the SYNC/EXT REF selector on the AD-44P circuit board INT SYNC.

• Using the reference video signal generated by a connected unit



• Using the video signal generated by the unit having no external sync input connector



1-4. SETTING UP EXECUTE EFFECTS

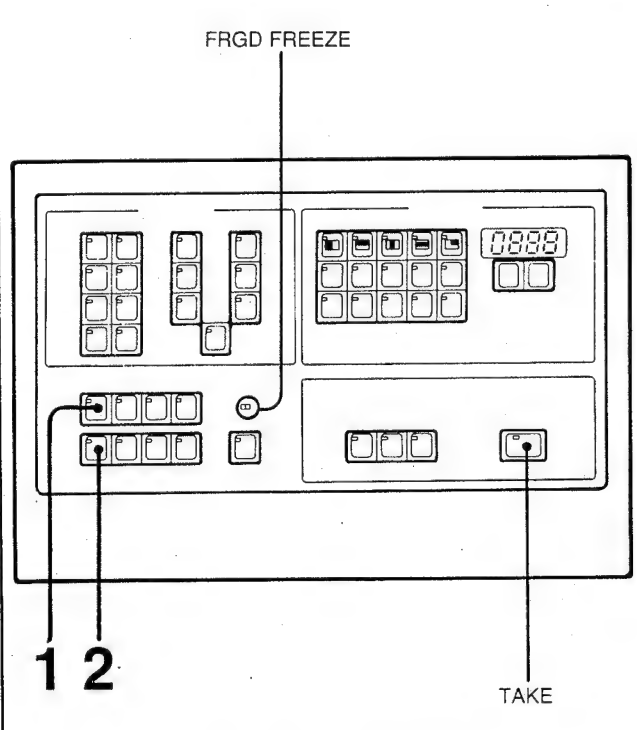
This section introduces the basic operation before starting to edit.

This includes such things as input source selection, effect selection and transition speed selection.

1-4-1. Selecting the Input Source

Generally, the picture which will appear before an effect starts is the FRGD bus picture and the picture which will appear after an effect ends is the BKGD bus picture. However, for particular

digital multi-effects, only the BKGD bus picture will appear at the start and at the end of the effect. For details, see "Types of effects" on page 1-26.



FRGD FREEZE

1 2

TAKE

1 Select the BKGD bus picture which will appear after an effect ends with the BKGD bus button. The pressed button lights.

When "BKGD" at the side of the BKGD bus buttons is lit, the input signal of the BKGD bus is output from the PGM OUT connector.

2 Select the FRGD bus picture which will appear before an effect starts with the FRGD bus button. The pressed button lights.

When "FRGD" at the side of the FRGD bus buttons is lit, the input signal of the FRGD bus is output from the PGM OUT connector.

• To monitor the picture of BKGD bus and FRGD bus

Either the BKGD bus or the FRGD bus signal picture is output from the PGM OUT connector. You can be sure which picture signal is output by the letters of the bus that are lit at the side of the bus buttons.

When FRGD is lit:

The input signal of the selected FRGD bus is output from the PGM OUT connector. You can be sure of the selected picture on the video monitor which is connected to the PGM OUT connector.

When BKGD is lit:

The input signal of the selected BKGD bus is output from the PGM OUT connector. You can be sure of the selected picture on the video monitor which is connected to the PGM OUT connector.

To change the picture viewed on the video monitor, press the TAKE button to make the letters of the bus desired—FRGD or BKGD—light up.

• To freeze the FRGD bus picture

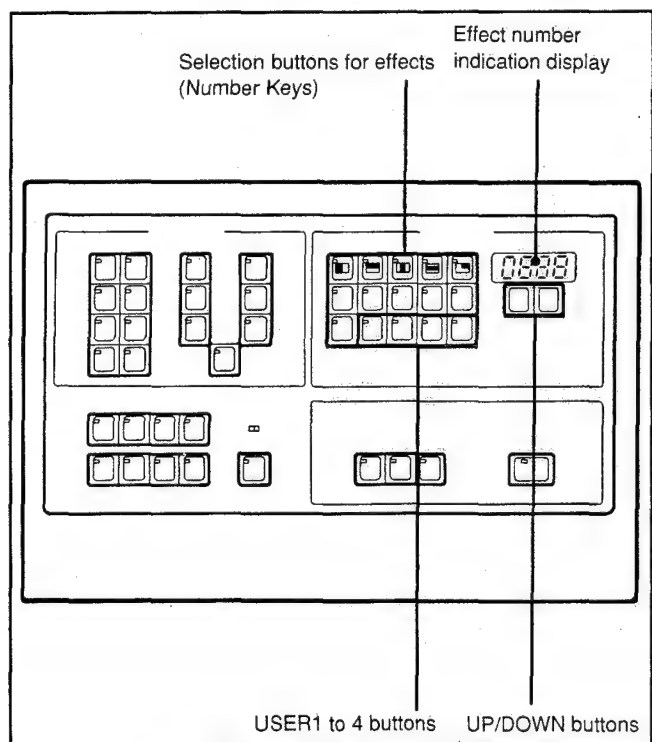
When performing A/B roll editing using the BVE-600/900 series editing control unit, the FRGD bus picture can be frozen by setting the FRGD FREEZE selector to IN.

IN side of the FRGD FREEZE selector: to freeze the picture

OUT side of the FRGD FREEZE selector: not to freeze the picture

For two-VCR editing using the RM-450 editing control unit, the FRGD bus picture will be frozen regardless of the setting of this selector when an effect is performed.

1-4-2. Selecting the Effect



There are two ways to select the effect.

Selecting the effect with the selection buttons for effects	Eleven effects (five WIPEs, MIX, CUT, FLIP, TUMBLE, SLIDE and SCROLL) can be selected directly by pressing the buttons.
Selecting the effect with the USER button	Pick out the patterns desired from the effect pattern list and designate them to the USER 1 through 4 buttons. We recommend that you designate the effects used frequently.

• How to designate < Example > To designate the diamond pattern to the USER 1 button

<p>1 Look up the diamond pattern number by referring to the effect pattern list. You will find 23.</p>	<p>To clear a wrong number entered Press the C button while keeping the USER 1 button pressed. The effect number which was designated just before this will be left in the memory.</p>
<p>2 Designate 23 to the USER 1. There are two ways to designate.</p> <p>Way 1 While pressing the USER 1 button, press the 2 and 3 buttons. "0023" is indicated on the effect number indication display.</p> <p>Way 2 While pressing the USER 1 button, press the UP or DOWN button and release the USER 1 button when "0023" is indicated on the effect number indication display.</p>	<p>To change the designated effect Make another designation. The designation you have made will be stored in the memory and remains unchanged unless you make another designation, even when the power is turned off.</p>

1-4-3. Selecting the Background Color and Boder Color

When the COLOR BKGD button of the FRGD bus or BKGD bus button is pressed, the screen will be white, black or colored instead of the color of the picture. This is called color background.

By setting the BORDER ON/OFF button to ON (the lamp on the selector lights up), you can form a border on the pattern

edge and color the border.

By setting the BORDER ON/OFF button to OFF, you can select and adjust the background color.

The background and border colors are selected independently on the BKGD/BORDER COLOR adjustment section.

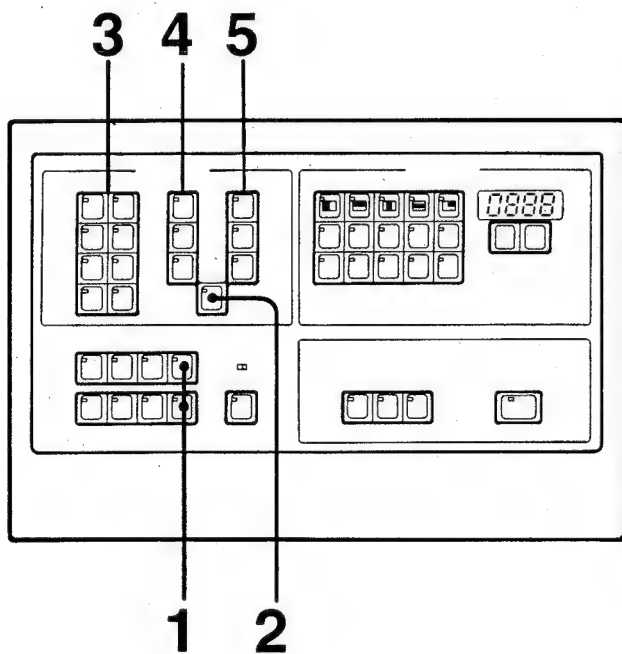


Background color



Bordered wipe pattern edge

• To select the background color



- 1** Select the COLOR BKGD with the BKGD or FRGD bus buttons.
The lamp on the pressed button lights up. To monitor the selected color, make sure that the letters of the bus (FRGD or BKGD) on which the COLOR BKGD has been selected lights up. When it does not light up, press the TAKE button to light it. (Selection is possible even if it is not lit, but the background color cannot be viewed on the video monitor connected to the PGM OUT connector.)
- 2** Make sure the BORDER ON/OFF lamp is not lit.
When it is lit, press the BORDER ON/OFF button to extinguish the lamp.
- 3** Select the desired hue by using the buttons for HUE.
- 4** Select the desired chrominance level by using the three buttons for CHROMA.
H button: for high level
M button: for middle level
L button: for low level
- 5** Select the desired luminance level using the three buttons for LUM.
H button: for high level
M button: for middle level
L button: for low level

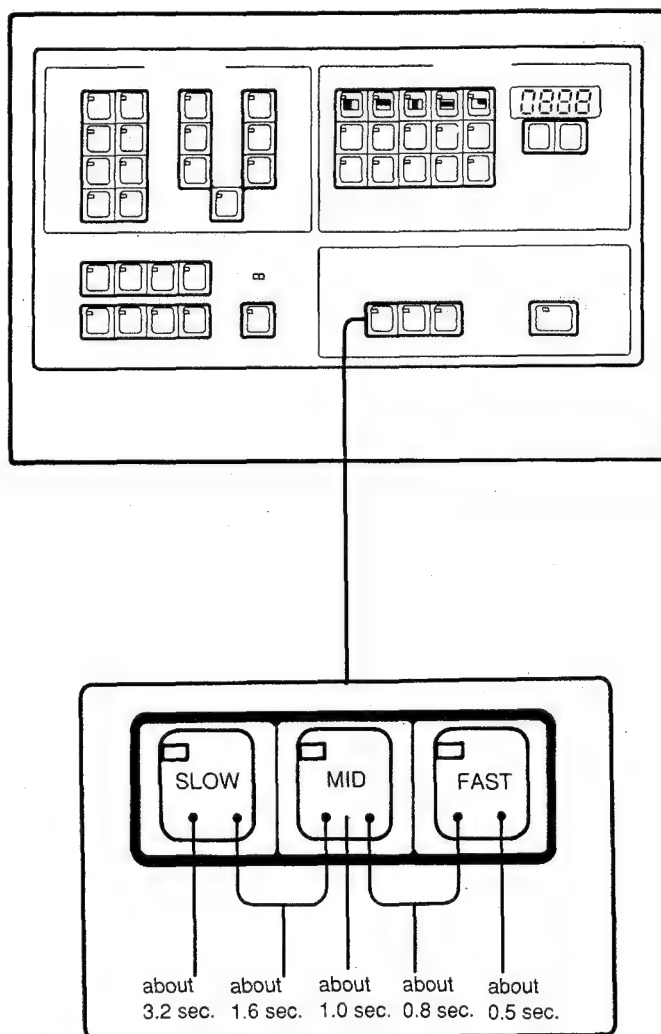
• To select the border color

<p>The diagram shows a control panel with several sections. At the top left, there are three vertical columns of buttons, each with a number above it: 2, 3, and 4. Below these is a large rectangular area containing a 3x3 grid of buttons (pointed to by 2), another 3x3 grid of buttons (pointed to by 3), and a third 3x3 grid of buttons (pointed to by 4). To the right of these grids is a digital display showing '0000'. Below the main grid area, there are two rows of buttons. The first row has four buttons, and the second row has four buttons. To the right of these is a 'TAKE' button, which is pointed to by a line from the label 'TAKE' below it. A large number '1' is placed below the main grid area, with a line pointing to a button on the left side of the panel.</p>	<p>1 Press the BORDER ON/OFF button to light the BORDER ON/OFF lamp.</p>
	<p>2 Select the desired hue by using the buttons for HUE.</p>
	<p>3 Select the desired chrominance level by using the three buttons for CHROMA. H button: for high level M button: for middle level L button: for low level</p>
	<p>4 Select the luminance level desired by using the three buttons for LUM. H button: for high level M button: for middle level L button: for low level</p>
<p>To view the selected border color on the video monitor Start the effect, such as a wipe, by pressing the TAKE button and check the border color.</p>	

1-4-4. Selecting the transition Duration

The period within which the FRGD bus picture is changed to the BKGD bus picture while using the effect is called the transition duration. The transition duration desired can be selected out of five choices.

Three buttons for the transition duration are provided. The following five selections are possible using three buttons.



When you press two buttons, press and hold one button down while pressing the other. The two button lamps light up.

1-5. BASIC EFFECT OPERATIONS

This section introduces the basic operation such as changing a picture by cut, mixing, wipe and digital multi-effects, and superimposing a title (characters) onto the BKGD picture.

1-5-1. Cut (Changing the Picture Instantaneously)

Cut is an effect instantaneously switching the FRGD bus picture to the BKGD bus picture.

FRGD bus picture (program picture)

BKGD bus picture (program picture)

Cut

<p>1 Select the picture which will appear at the end of the effect by using the BKGD bus buttons.</p> <p>2 Select the picture which will appear at the start of the effect by using the FRGD bus buttons.</p> <p>3 Press the CUT button. The effect number indication display reads 1059 (effect number for cut).</p>	<p>4 Make sure that "FRGD" is lit. When it is not lit, press the TAKE button once to light it.</p> <p>5 Press the TAKE button The PGM OUT picture is switched from the FRGD bus picture to the BKGD bus picture at the end of the transition. ("FRGD" goes out and "BKGD" lights up.)</p>
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1-5-2. Mix (Changing the Picture by Dissolving One Picture into Another)

Mix is a dissolve function which is made between the FRGD and BKGD bus pictures. The FRGD bus picture is gradually switched to the BKGD bus picture.

FRGD bus picture (program picture)

BKGD bus picture

Mix

<p>1 Select the BKGD bus picture which will appear at the end of the effect by using the BKGD bus buttons.</p> <p>2 Select the FRGD bus picture which will appear at the start of the effect by using the FRGD bus buttons.</p> <p>3 Press the MIX button. The effect number indication display will read 1080 (effect number for mix).</p> <p>4 Select the transition duration by using the buttons for TRANSITION SPEED.</p>	<p>5 Make sure that "FRGD" is lit. When it is not lit, press the TAKE button once to light it.</p> <p>6 Press the TAKE button to execute the effect. During the transition, the signal at the PGM OUT connector is switched from the FRGD bus picture to the BKGD bus picture. (Both "FRGD" and "BKGD" and the lamp on the TAKE button light up.) At the end of the transition, the BKGD bus signal is output from the PGM OUT connector. ("FRGD" and the lamp on the TAKE button go out and "BKGD" lights up.)</p>
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1-5-3. Wipe (changing one picture to another as revealing the new picture)

Wipe is a function revealing the BKGD bus picture over the FRGD bus picture with a geometrical pattern moving across the screen. Five patterns can be selected by simply

pressing an effect selection button, and 156 patterns can be selected with the 4-digit effect number.

Effect number indication display

FRGD bus picture
(program picture)

BKGD bus picture

Wipe

Bordered wipe pattern edge

BKGD bus picture
(program picture)

<p>1 Select the BKGD bus picture which will appear at the end of the effect by using the BKGD bus button.</p>	<p>4 Add the border if necessary by pressing the BORDER ON/OFF button. The lamp on the BORDER ON/OFF button lights up.</p>
<p>2 Select the FRGD bus picture which will appear at the start of the effect by using the FRGD bus button.</p>	<p>5 Select the transition duration by using the TRANSITION SPEED buttons.</p>
<p>3 Select the desired wipe pattern. To select a wipe pattern with the effects selection buttons. Press one of five wipe pattern buttons: The effect number indication display will read the 4-digit effect number. To select a wipe pattern with a pattern code Press one of the USER 1 to 4 buttons. To designate the effect number to USER 1 to 4 buttons, refer to "Selecting the effect with the USER button" on page 1-17.</p>	<p>6 Make sure that "FRGD" is lit. When it is not lit, press the TAKE button to light it.</p>
	<p>7 Press the TAKE button to execute the effect. During the transition, the signal at the PGM OUT connector is changed from the FRGD bus picture to the BKGD bus picture. (Both "FRGD" and "BKGD" and the lamp on the TAKE button light up.) At the end of the transition, the BKGD bus signal is output from the PGM OUT connector. ("FRGD" and the lamp on the TAKE button go out and "BKGD" lights up.)</p>

1-5-4. Digital Multi-effects

Digital multi-effects (DME), unlike mix or wipe, manipulate the geometry of the pictures involved. A DME alters the geometry of the picture itself — e.g. size, shape, rotation, etc. This is achieved by digitizing the signal and storing it in

the local memory. Four preassigned DME patterns can be selected by simply pressing effects selection buttons, and 117 DME patterns can be selected through designations to the USER 1 through 4 buttons.

• Preassigned DME patterns

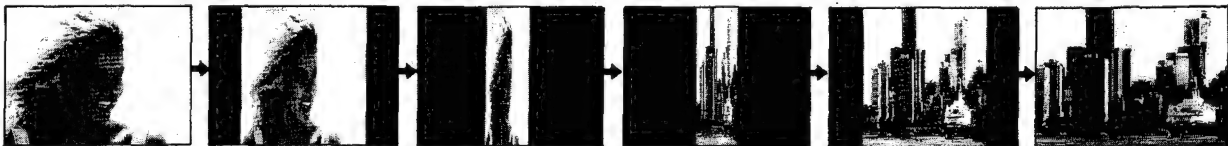
Four standard DME patterns (flip, tumble, slide and scroll) can be selected by pressing the effects selection buttons.

• Flip and Tumble

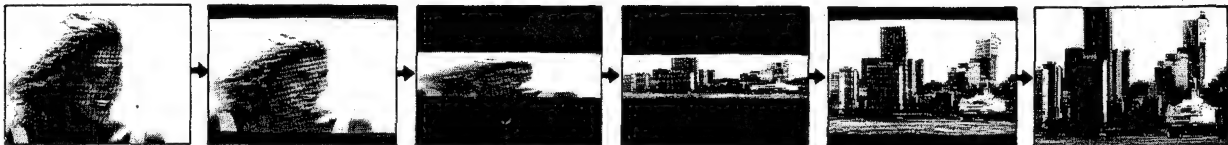
Flip and tumble are DME patterns to reduce a FRGD bus picture and to expand a BKGD bus picture in the direction of height or width.

- The blank screen area can be colored by using the color background function.

Flip



Tumble



Background color

• Slide and Scroll

The FRGD bus picture itself moves in the direction of the transition, as if it is pulled to the right, or up, thus revealing the BKGD bus picture behind it.

Slide



Scroll



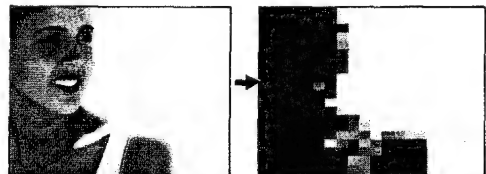
• Optional DME patterns

117 DME patterns are available. The typical DME patterns are shown below: mosaic, picture in picture, rotation, mirror, etc. For the remaining DME patterns, refer to "Effect pattern list" on pages 1-35 to 48.

Mirror



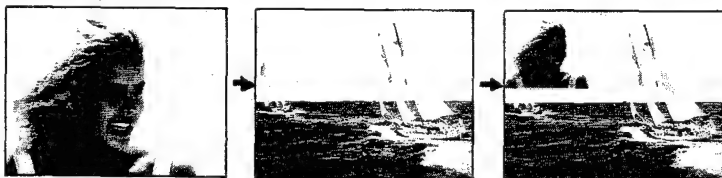
Mosaic



Rotation



Picture in picture



• Types of effects

The effects can be divided into six types and depend on the effected bus and the transition duration.

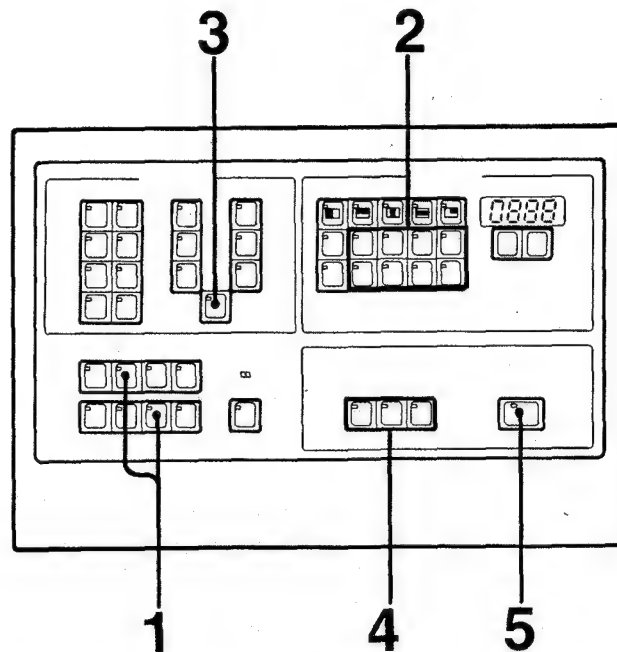
Transition process Type	Effected bus	Transition duration
1	FRGD	Variable
2	BKGD	Variable
3	FRGD and BKGD	Variable
4	FRGD	Fixed
5	BKGD	Fixed
6	FRGD and BKGD	Fixed

Type	Effect No.
1	1 to 681 (98 patterns), 1200 to 1816 (66 patterns)
2	1001, 1002, 1030 to 1042 (9 patterns)
3	1000, 1003, 1006, 1080, 1900 to 1954 (16 patterns)
4	700 to 817 (63 patterns), 1059
5	1020 to 1026 (6 patterns), 1060 to 1071 (6 patterns)
6	1082 to 1125 (13 patterns)

• Notes

- As for effects 516 to 681 of type 1, three kinds of transition durations are available instead of five. Namely, the transition duration when pressing the SLOW button and the transition duration when pressing the SLOW and MID buttons are the same. Also, the transition duration when pressing MID and the one when pressing MID and FAST buttons are the same.
- As for effects 700 to 817 of type 4, their transition duration is the same. But the fluctuating state of matrix is different, depending on selection of the transition duration.

• Operation of DME



1 **Types 1, 3 and 4:** Select the pictures which will appear at the end and at the start of the effect by using the BKGD bus and FRGD bus buttons respectively.

Types 2 and 5: Select the BKGD bus picture by using the BKGD bus button.

Type 6: Select the FRGD and BKGD bus pictures by using the FRGD and BKGD bus buttons.

2 **Select the desired digital effect pattern and press that button.**
To select a digital effect other than the standard four DME patterns, refer to "Selecting the effect with the USER button" on page 1-17.

3 **Add the border if necessary by pressing the BORDER ON/OFF button.**
The lamp on the BORDER ON/OFF button lights up.

4 **Select the desired transition duration by using buttons for TRANSITION SPEED.**

5 **Execution of the effect**
Types 1, 3 and 4

1 "FRGD" must be lit. When it is not lit, press the TAKE button to light it.

2 Press the TAKE button to execute the effect. During the transition, the signal at the PGM OUT connector is changed from the FRGD bus signal to the BKGD bus signal. ("FRGD" and "BKGD" and the lamp on the TAKE button light up.) At the end of the transition, the BKGD bus signal is output from the PGM OUT connector. ("FRGD" and the lamp on the TAKE button go out, and "BKGD" lights up.)

Types 2, 5 and 6

Press the TAKE button.

The effect is executed immediately. The execution of the effect is being continued and the lamp on the TAKE button is lit until the TAKE button is pressed again. To stop the effect execution, press the TAKE button again.

1-5-5. Superimposing the title

The characters for which an effect has been made can be superimposed on the BKGD bus picture.

The character generator, video camera and so on can be connected to one of the VIDEO IN connectors as the signal source for the characters. The characters for which an effect such as rotation, slide and so on has been made can be inserted.

Effect number indication display

BKGD bus picture
(Picture in which the characters are to be inserted)

FRGD bus picture
(Characters to be inserted)

BKGD bus picture

<p>1 Select the desired BKGD bus picture in which the characters are to be inserted by using the BKGD bus button.</p> <p>2 While pressing the FRGD bus button which corresponds to the character signal, press the TITLE button. The lamp on the TITLE button lights up.</p> <p>• Note When the character picture signal is the component video signal, this component video signal is input directly to the FRGD bus from the VIDEO IN connector (12 pin) (when editing and using with BVS-3200CP). In this case, the video signal input to VIDEO 1/2/3 connectors cannot be selected by using the FRGD bus button. However, to use the component video signal as the character picture, press the TITLE button while holding down one of FRGD bus buttons.</p>	<p>3 Select the desired effect. The effect number will be indicated on the effect number indication display.</p> <p>• Note When selecting the effect type that only the BKGD bus picture is effected, characters cannot be inserted. (Refer to page 1-26.)</p> <p>4 Select the transition duation by using the buttons for TRANSITION SPEED.</p>
---	---

<p>5 Make sure that "FRGD" is lit. If it is not lit, press the TAKE button to light it. When it is lit, the FRGD bus characters are inserted in the BKGD bus picture. Now the effect is ready to start.</p>	<p>To deactivate the title superimposing function Press the TITLE button so that the lamp on the TITLE button will go out.</p>
<p>6 Press the TAKE button to execute the effect. FRGD bus characters on the BKGD bus picture changes depending on the selected effect.</p>	

• **Setting the NOR/REV selector**

Set the NOR/REV selector according to the black or white characters to be superimposed.

Set to NOR when the characters are white on the black background.

Set to REV when the characters are black on the white background.

• **Adjustment the key level for the character signal**

Adjust the key level for the character signal with the KEY CLIP control on the internal circuit board so that the inserted characters will be clear.

1-6. USING THE DME-450P WITH AN EDITING CONTROL UNIT

The RM-450, BVE-600 or BVE-900 editing control unit can be connected to the DME-450P. Also, the DME-450P can be a combination switcher when it is used together with a BVS-3000 series video switcher.

• Interface

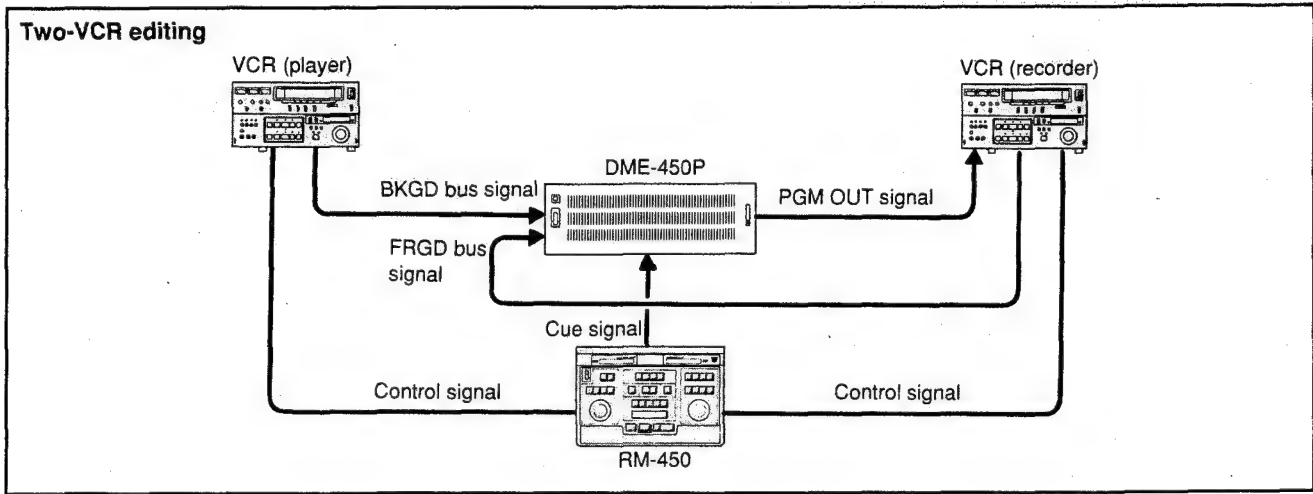
The interface and controllable functions for each editing control unit are listed below.

Editing control unit	Interface	Controllable functions
RM-450	CUE	Execution of the effect
BVE-600	T1 and T2	Execution of the effect
BVE-900	9-pin serial interface	<ul style="list-style-type: none">• Execution of the effect• Selection of FRGD bus and BKGD bus• Selection of the effect• Selection of the transition duration
BVS-3100P/3200P/3200CP	9-pin serial interface	All the functions except for those of the FRGD FREEZ selector and TITLE button

- Be sure to set the RM-450/BVE-600/BVE-900/BVS-3000 series unit selector to the appropriate position in accordance with the connected unit. (Refer to page 1-9.)
- For connections to units, refer to page 1-10 to 1-15.
- For operations of the connected unit, refer to the instruction manual of the unit.

1-6-1. Editing Using an RM-450 Editing Control Unit

By using the DME-450P with the RM-450, electronic editing with special effects can be carried out using two VCRs: a player and a recorder.

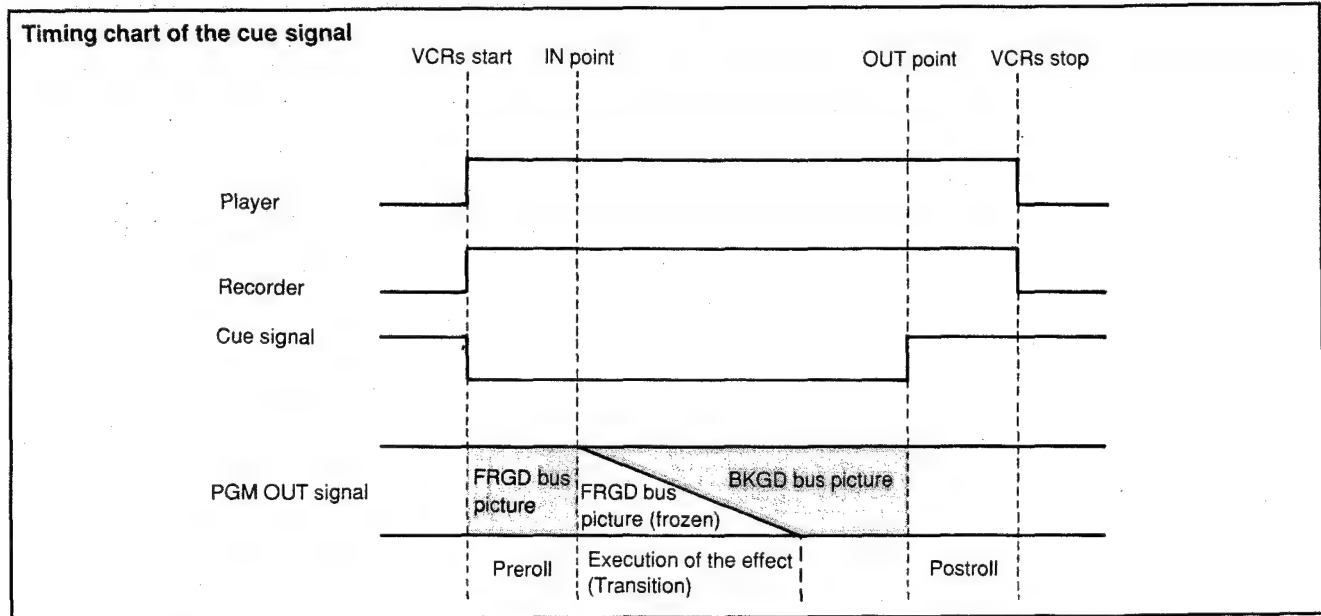


• Cue signal

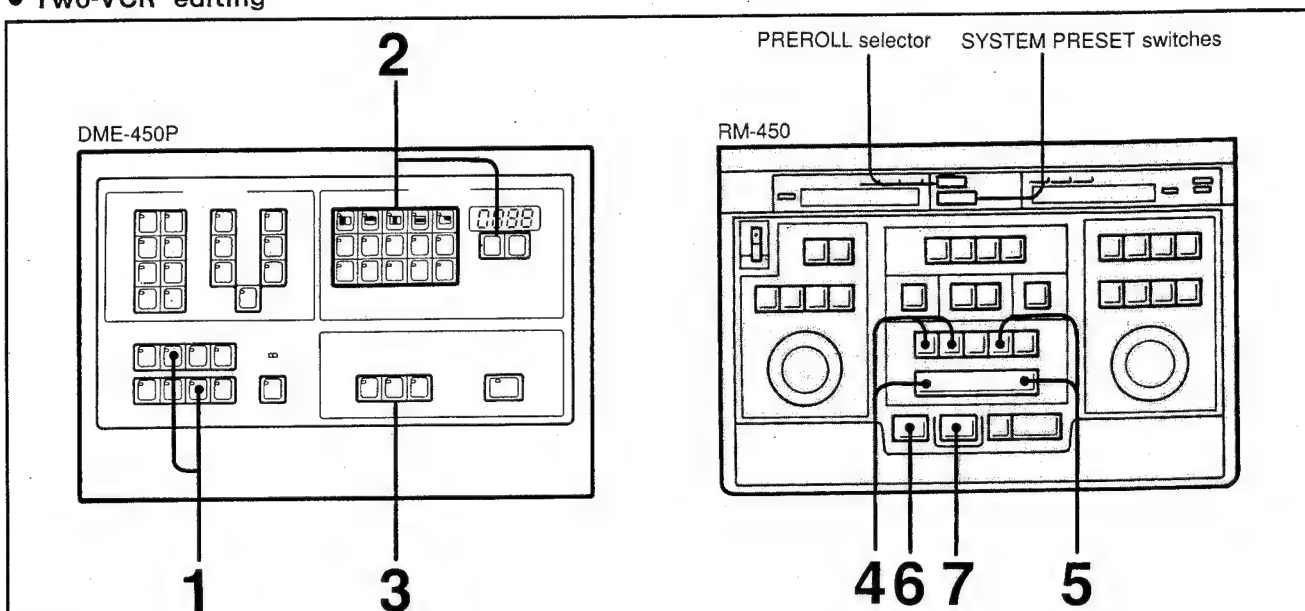
The DME-450P is controlled by the cue signal sent from the RM-450. The preroll time must be set to five or seven seconds and the time to send the cue signal must be set to three seconds before the IN point on the RM-450. When starting to edit, the recorder and the player are prerolled five or seven seconds before the IN point. At the IN point, the picture from the recorder (FRGD bus picture) is frozen and the effect is started. At the same time, the recorder starts recording.

• Note

When editing by using the DME-450P with the RM-440, set the preroll time to five seconds on the RM-440. (The cue signal will be sent five seconds before the IN point.)



• Two-VCR editing



Preparation

Set the RM-450 as follows.

Set the PREROLL selector on RM-450 (preroll time) to five or seven seconds. Set the SYSTEM PRESET switches so that the cue signal will be sent three seconds before the IN point. Note that only the above preroll time and the cue signal out timing allow you to execute the correct editing.

Operations on the DME-450P

- 1** Select the picture for the recorder with the FRGD bus button and the picture for the player with the BKGD bus button.
- 2** Select the effect.
- 3** Select the transition duration by using the buttons for TRANSITION SPEED.

Operations on the RM-450

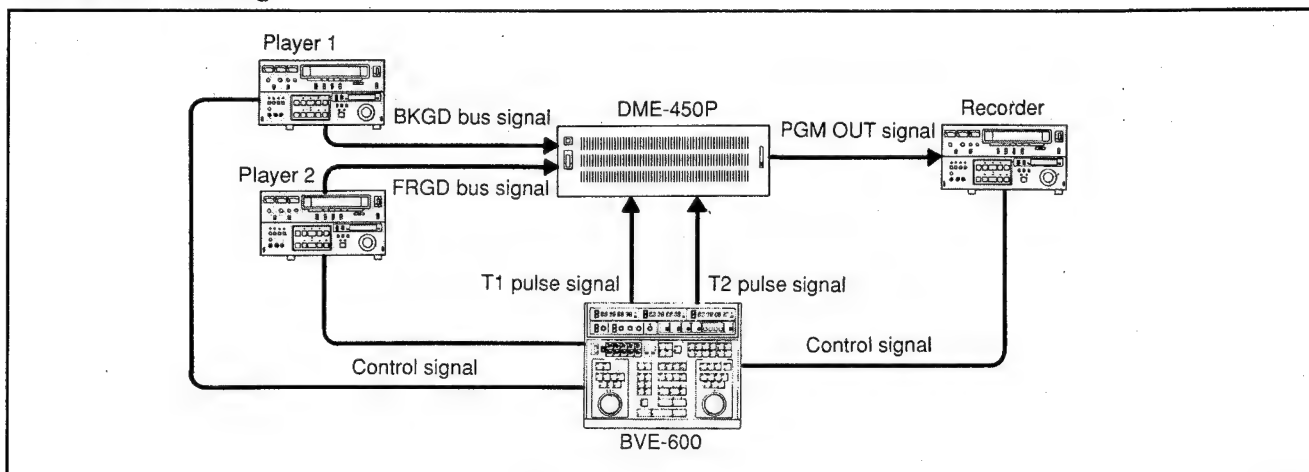
- 4** Set the IN point and the OUT point of the BKGD bus picture on the PLAYER side.
- 5** Set the IN point of the FRGD bus picture on the RECORDER side.
- 6** Press the PREVIEW button to monitor the picture on which the effect is to be made before executing the effect, if required.
- 7** Press the AUTO EDIT/END button to execute the effect.

1-6-2. Control from a BVE-600 Editing Control Unit

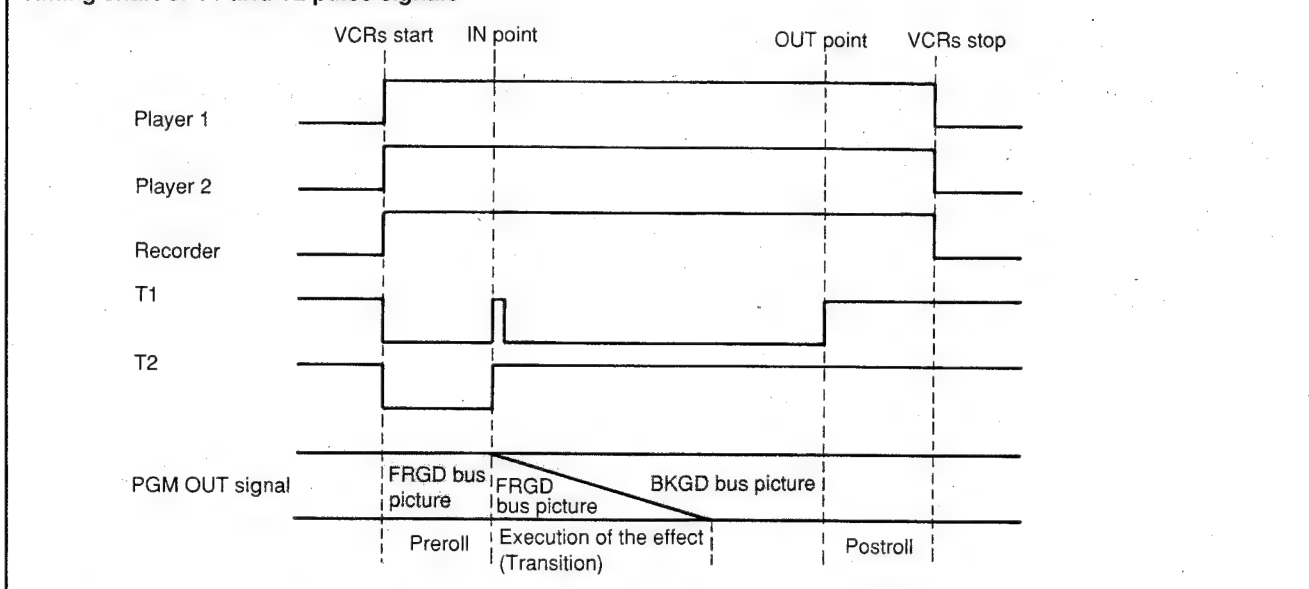
Using this unit with the BVE-600 editing control unit allows A/B roll editing with two players and one recorder.

The execution of the effect selected on the DME-450P can be controlled from the BVE-600, with the T1 and T2 pulse signals.

• A/B roll editing



Timing chart of T1 and T2 pulse signals



Notes on operating the BVE-600

- For A/B roll editing with the BVE-600, set the duration of the A roll to 0 (namely, do not designate the OUT point of the A roll, so that the effect starts immediately from the IN point). Also, set the FRGD FREEZE selector on the DME-450P to OUT (not frozen).
- For A roll editing with the BVE-600, set the FRGD FREEZE selector on the DME-450P to IN (frozen).

1-6-3. Control from a BVE-900 Editing Control Unit

Using this unit with the BVE-900 editing control unit allows A/B roll editing.

• Data setting

When editing using with the BVE-900, the crosspoint, effect number and transition duration can be selected on the BVE-900. Set the crosspoint, effect number and transition duration on the BVE-900 as follows:

Selection of the crosspoint

DME-450P	1	2	3	COLOR BKGD
BVE-900	01	02	03	04

Selection of the effects

You can select the effect by using the effect numbers of the DME-450P. Set the effect number, referring to "Effect pattern list" on pages 1-35 to 1-48.

Selection of the transition duration

The transition durations which have been set on the BVE-900 are read out on the DME-450P as follows:

Setting value on the BVE-900	Setting value on the DME-450P and indication	
0 to 19 frames	13 frames	FAST lights up.
20 to 25 frames	20 frames	FAST/MID light up.
26 to 39 frames	26 frames	MID lights up.
40 to 79 frames	40 frames	SLOW/MID light up.
80 frames and over	80 frames	SLOW lights up.

• Notes on the editing points

- For A/B roll editing with the use of the BVE-900, set the duration of the A roll to 0 (namely, do not designate the OUT point of the A roll, so that the effect starts immediately from the IN point).
- To select whether or not to freeze the FRGD bus picture, use the FRGD FREEZE selector on the DME-450P (refer to page 1-3.)

1-6-4. Control from a BVE-3000 Series Video Switcher

When using with the BVS-3000 series video switcher, the followings can be controlled from the BVS-3000 series video switcher.

- Digital multi-effects of the DME-450P can be added to the effects of the BVS-3000 series video switcher.
- All the functions of the controls and buttons except for those of the FRGD FREEZE selector and TITLE button on the control panel can be controlled from the BVS-3000 series video switcher through the 9-pin serial interface.
- When selecting the effect with the effect number "1100", the execution of the effect can be controlled manually with the fader lever and positioner on the BVS-3000 series video switcher.

For details, refer to the operation manual for the BVS-3000 series video switcher.

1-7. EFFECT PATTERN LIST

• How to read the pattern

Direction of the wipe

FRGD bus picture

Right and left mirror picture

Upper and lower mirror picture

Abbreviations in the illustrated patterns
 FG: Foreground (FRGD) picture
 BG: Background (BKGD) picture

Single pattern wipe 1									
1		2		3		4		5	
6		7		8		9		10	
11		12		17		18		19	
20		21		22		23		30	
31		32		33		34		35	
36		37		38		39		40	
41		42		43		44		45	
46									






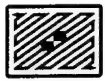
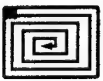
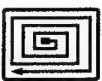


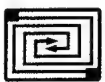


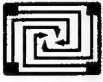







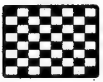


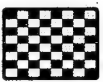
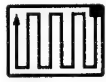

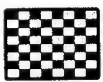
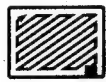
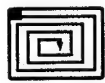
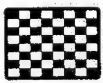
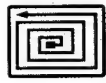

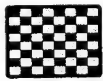
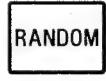
Single pattern wipe 2									
310		311		312		313		314	
315		316		317					









Rotation wipe 1									
516		517		518		519		520	
521		522		523					











Rotation wipe 2									
604		605		606		607		612	
613		614		615		620		621	
622		623		624		625		628	
629		640		641		642		643	
644		645		646		647		648	
649		650		651		660		661	







Rotation wipe 2 (Continued)									
662		663		664		665		670	
671		672		673		674		675	
676		677		678		679		680	
681									






Matrix wipe 1									
700		701		702		703		704	
705		706		707		710		711	
712		713		714		715		716	
717		720		721		722		723	
724		725		726		727		730	
731		732		733		734		735	

Matrix wipe 1 (Continued)									
736		737		740		741		742	
743		750		751		752		753	
754		755		756		757		758	
760		761		762		763		764	
770									
771									
772									
773									
774									

Matrix wipe 2									
800		806		807		808		809	
815		816		817					

Mosaic									
1000			1001			1002			
1003			1006						

Static mirror									
1020		1021		1022		1023		1024	
1026									

Negative color									
1030			1031						
1032									

Black and white			
1033	BG B&W	1034	BG BG B&W
1035	BG B&W	BG	













Postalization			
1040	BG POST	1041	BG BG POST
1042	BG POST	BG	

Cut			
1059	FG	(CUT)	BG

Freeze							
1060	BG FIELD FREEZE	1061	BG FRAME FREEZE	1066	BG B&W	1067	BG



Drop shadow							
1070	BG	1071	BG CLIP				

Mixture						
1080	FG	BG	(DISSOLVE)	BG	1082	FG + BG

Picture in picture									
1100		1110		1111		1112		1113	
1114		1120		1121		1122		1123	
1124		1125							

Dynamic mirror			
1200			
1202			
1204			

Stream	
1211	

Zigzag			
1231		1233	

Slide					
1300		1303		1306	
				1307	

Split slide 1					
1330		1331		1332	
1340					
1343					
1349					
1351					

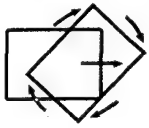



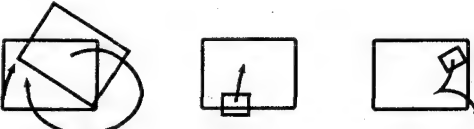
Split slide 2					
1360					
1361					
1370		1371		1372	
				1373	



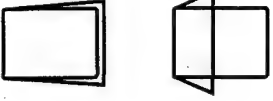
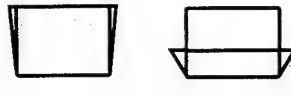


Multiple split					
1403		1418		1420	
1432		COLOR			
1447		COLOR			
1451		COLOR			

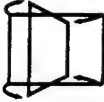

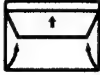





Compression					
1500			1505		
1506		1507		1508	

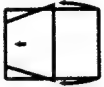








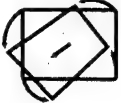





Skew					
1510		1512		1520	
				1521	
				1522	




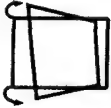


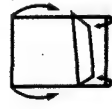











2D rotation					
1607			1612		




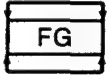

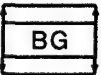

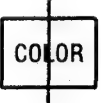


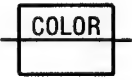




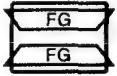

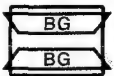









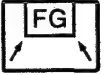


2D rotation + compression + slide	
1620	
1630	
1635	
1640	
1643	





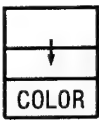













3D rotation			
1700		1702	
1705		1706	
1730		1740	

3D rotation + compression			
1760			
1762			
1765			

3D rotation + compression + slide			
1770			
1780			
1781			
1782			
1800			

3D rotation + compression + slide (continued)			
1802			
1806			
1807			
1810			
1814			
1816			

Turn			
1900			
1901			
1902			
1905			
1912			
1916			
1920			
1933			
1942			
1945			

Turn (continued)			
1946			
1947			
1948			
1949			
1950			
1954			

1-8. SPECIFICATIONS

Signal system	PAL color system
Input signals	
VIDEO IN 1 - 3	BNC type (3) 1.0 Vp-p (VBS), 75 ohms
COMPONENT IN (BETACAM)	12-pin (1) Luminance Y: 1.0 Vp-p, 75 ohms Chrominance R-Y/B-Y: 0.525 Vp-p (100/0/75/0 color bars), 75 ohms
Output signals	
PGM OUT	BNC type (2) 1.0Vp-p (VBS), 75 ohms
COMPONENT OUT (BETACAM)	12-pin (1) Luminance Y: 0.70Vp-p (without sync) 75 ohms Chrominance R-Y/B-Y: 0.525Vp-p (100/0/75/0 color bars), 75 ohms
KEY OUT	BNC type (1) 1.0Vp-p, 75 ohms
SYNC OUT	BNC type (3) 2.0 ± 0.5 Vp-p, 75 ohms
Control signals	
Interfaces	BVS-3000 series video switcher: 9-pin remote Editor: BNC type (CUE/T1, T2) 9-pin remote Control panel: 25-pin remote
Performance	
DP (10 to 90% APL)	Less than 2° (BKGD bus) Less than 3° (FRGD bus)
DG (10 to 90% APL)	Less than 2% (BKGD bus) Less than 6% (FRGD bus)
Crosstalk (4.43MHz)	Less than -52dB
Frequency response (1MHz reference)	300 kHz to 5.5MHz ±0.5dB (BKGD bus) 300 kHz to 2.0 MHz ^{+1.0} _{-3.0} dB (FRGD bus)
S/N	Over 56 dB (BKGD bus)
Effect system	284 preset effects 5 transition speeds 2 field memories (454 × fH sampling frequency)

General

Power requirement	220 V to 240 V AC, 50/60 Hz
Operating voltage	180 V to 264 V AC, 48 Hz to 63 Hz
Power consumption	70 W
Operating temperature	0°C to 40°C (32°F to 104°F)
Dimensions (w/h/d)	Control panel: 390 × 62 × 264 mm (15 ³ / ₈ × 2 ¹ / ₂ × 10 ¹ / ₂ inches)
	Main unit 424 × 132 × 350 mm (16 ³ / ₄ × 5 ¹ / ₄ × 13 ⁷ / ₈ inches)
Weight	Control panel: 3 kg (6 lb 10 oz) Main unit: 11 kg (24 lb 5 oz) (with cables)
Supplied accessories	AC power cord 1 25-pin control cable (5m) 1 Rack mount metals 1 set Operation manual 1

Design and specifications are subject to change without notice.

• Recommended equipments and accessories

Cable

SWC-2530D (30 m, 25 pin, Control panel ↔ Main unit)

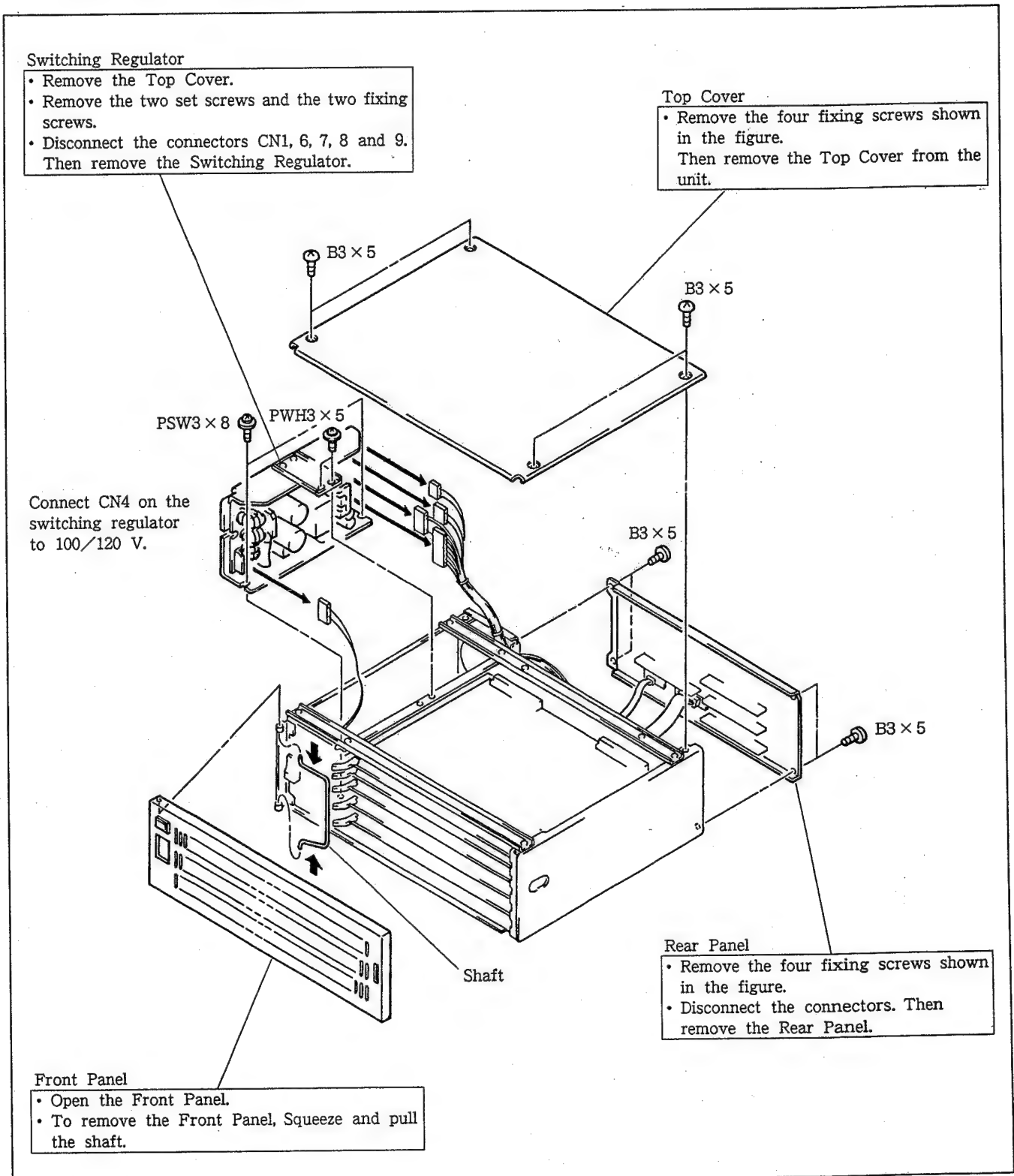
Peripherals

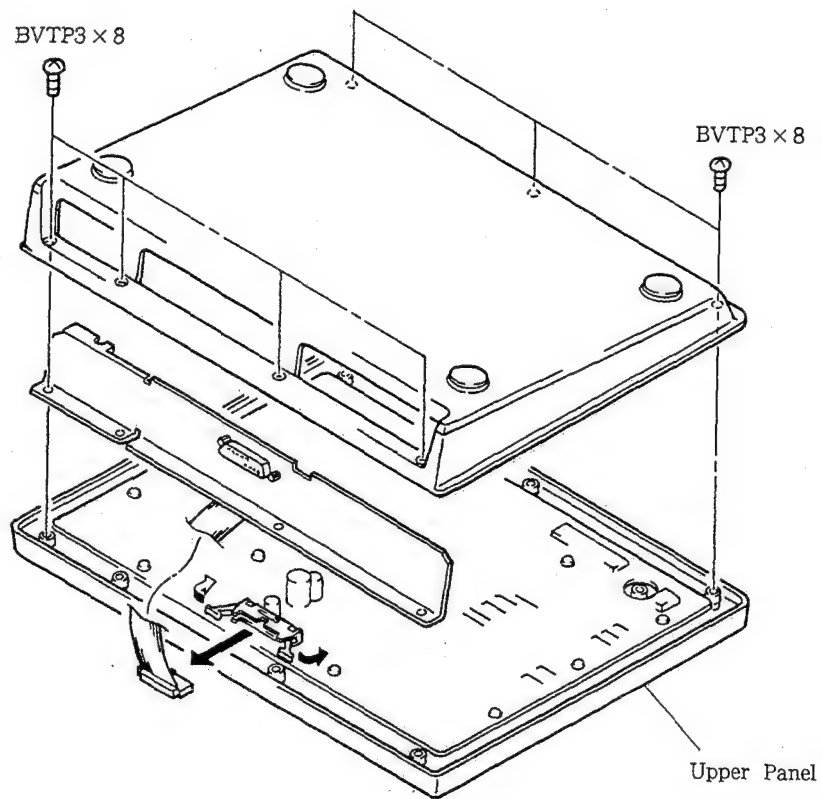
Editing control unit RM-450, BVE-600, BVE-900
Video switcher BVS-3000 series
Audio mixer MXP-29/VSP-A600
U-matic VCR, VO series, BVU series
Color video monitor PVM series

SECTION 2

SERVICE INFORMATION

2-1. REMOVAL OF CABINET





Console Unit

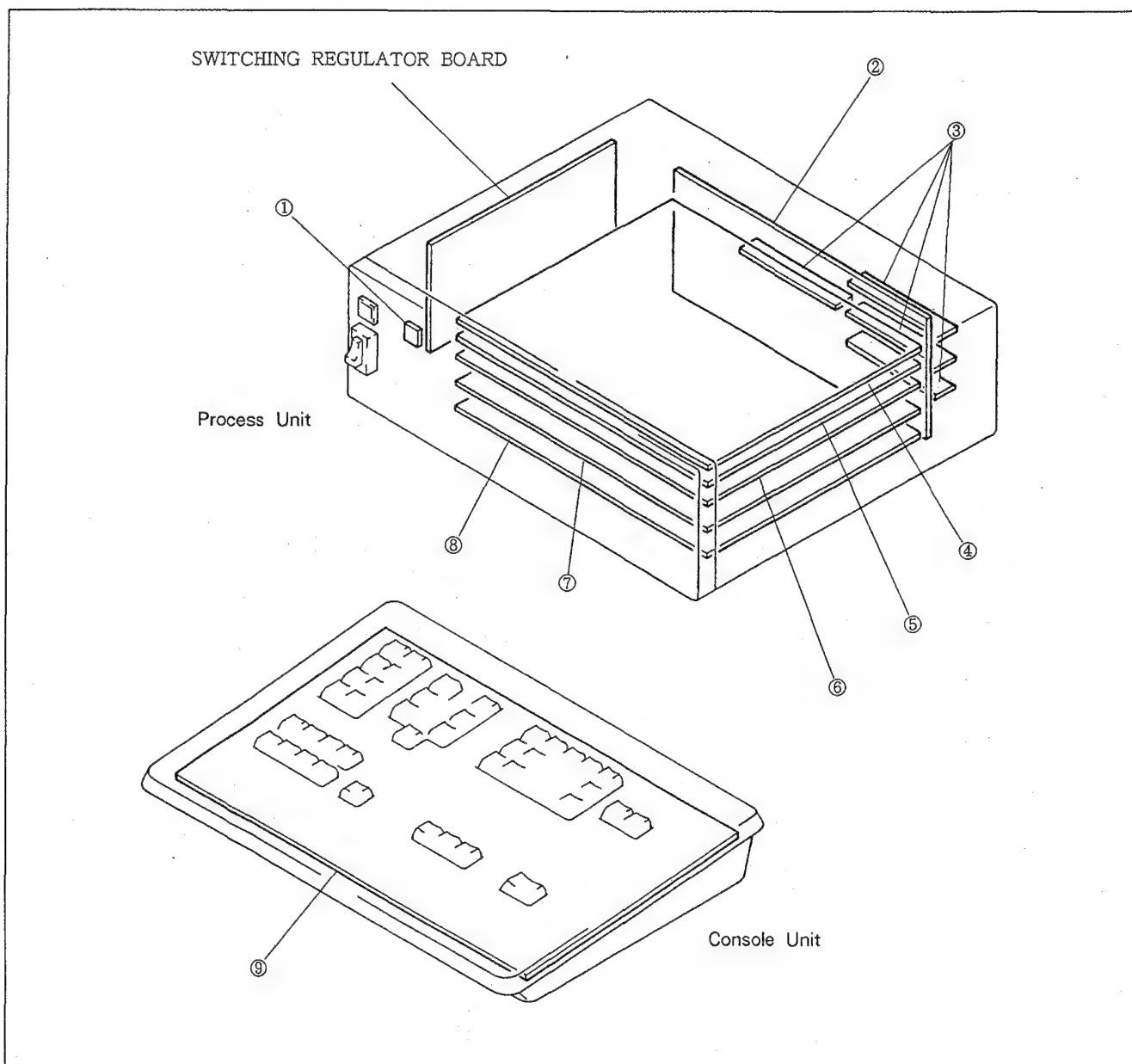
- Remove the seven screws shown in the figure.
- Disconnect the connector 5 shown in the figure. Then remove the Upper Panel from the Bottom Panel.

2-2. PRINTED CIRCUIT BOARD

Circuit information is provided below.

BOARD	FUNCTION
AD-44P	A/D Converter
DA-33P	D/A Converter
MY-41P	Memory Board
SY-146P	System Control Board
PU-69	Process Board
KY-163	Function Keyboard
MB-249	Mother Board
LE-55	Power Indicator
CN-231	Connector Board

2-3. LOCATION OF PRINTED CIRCUIT BOARDS



- | | |
|-----------|----------|
| ① LE-55 | ⑥ MY-41P |
| ② MB-249 | ⑦ DA-33P |
| ③ CN-231 | ⑧ AD-44P |
| ④ SY-146P | ⑨ KY-163 |
| ⑤ PU-69 | |

2-4. USING THE DME-450P WITH AN EDITING CONTROL UNIT

The RM-450, BVE-600 or BVE-900 editing control unit can be connected to the DME-450P. Also, the DME-450P can be a combination switcher when it is used together with a BVS-3000 series video switcher.

• Interface

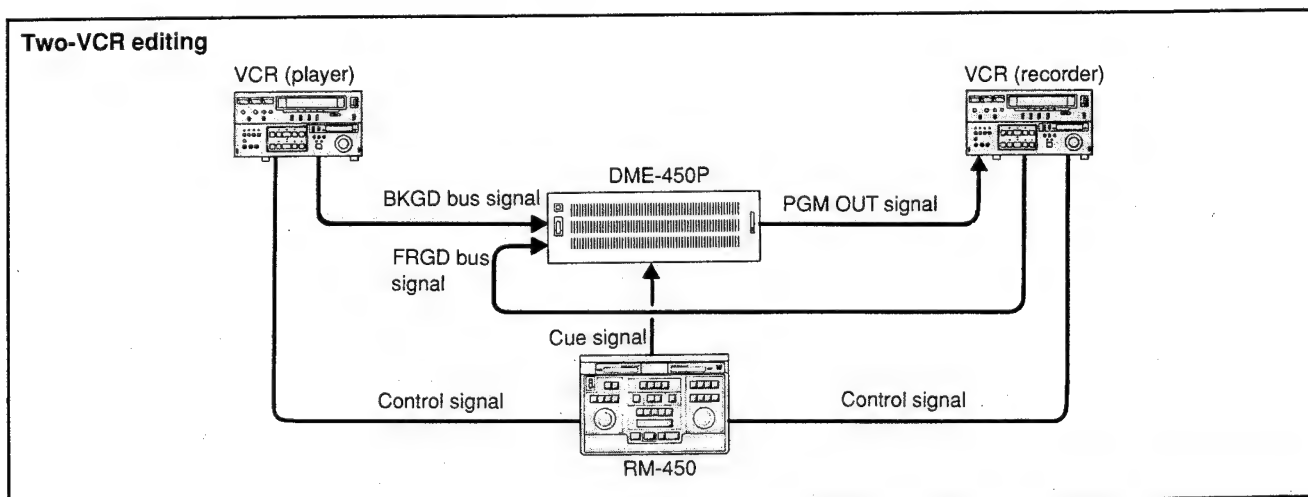
The interface and controllable functions for each editing control unit are listed below.

Editing control unit	Interface	Controllable functions
RM-450	CUE	Execution of the effect
BVE-600	T1 and T2	Execution of the effect
BVE-900	9-pin serial interface	<ul style="list-style-type: none">• Execution of the effect• Selection of FRGD bus and BKGD bus• Selection of the effect• Selection of the transition duration
BVS-3100P/3200P/3200CP	9-pin serial interface	All the functions except for those of the FRGD FREEZ selector and TITLE button

- Be sure to set the RM-450/BVE-600/BVE-900/BVS-3000 series unit selector to the appropriate position in accordance with the connected unit. (Refer to page 1-9.)
- For connections to units, refer to page 1-10 to 1-15.
- For operations of the connected unit, refer to the instruction manual of the unit.

2-4-1. Editing Using an RM-450 Editing Control Unit

By using the DME-450P with the RM-450, electronic editing with special effects can be carried out using two VCRs: a player and a recorder.

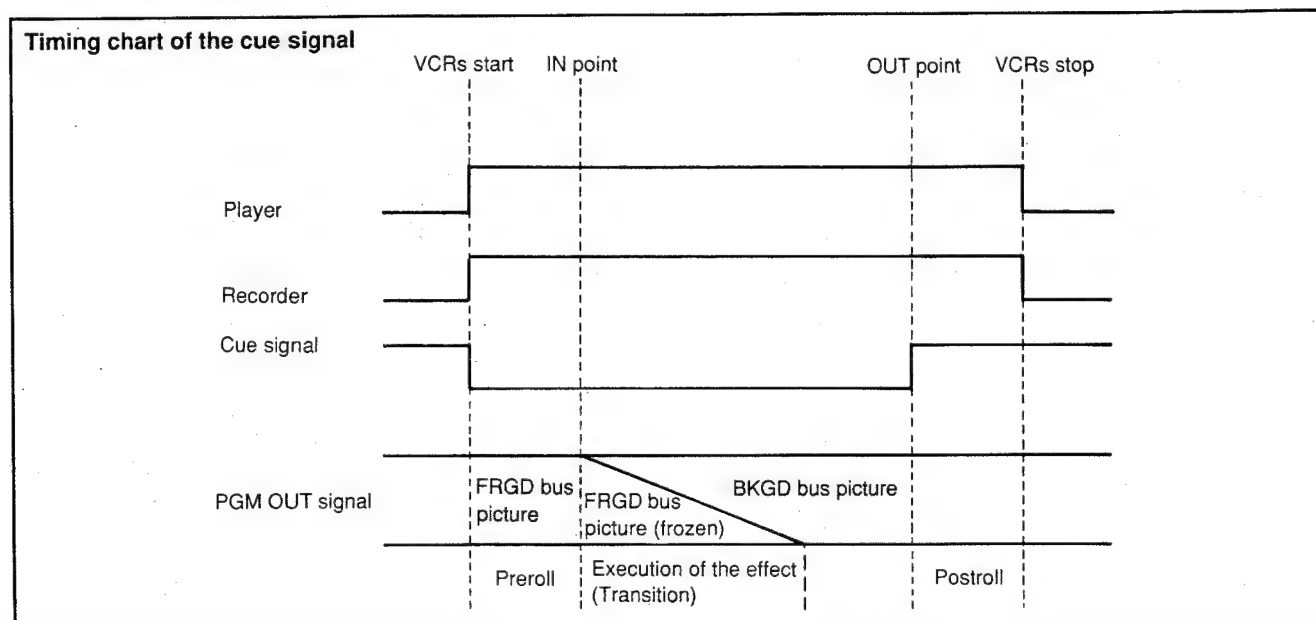


• Cue signal

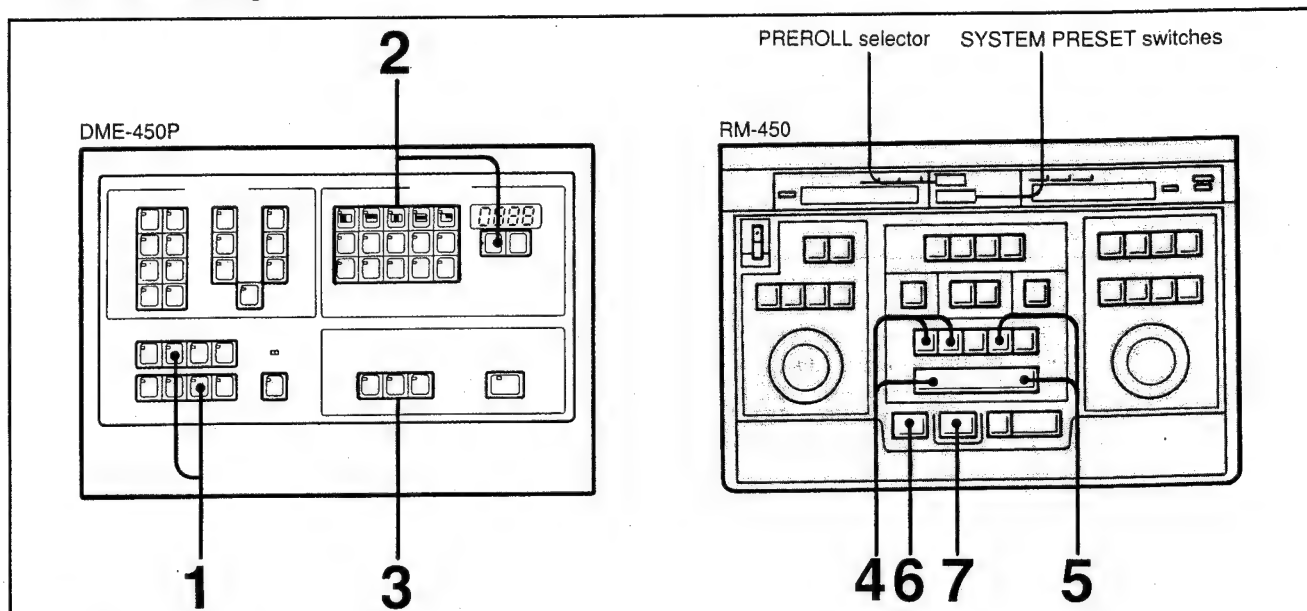
The DME-450P is controlled by the cue signal sent from the RM-450. The preroll time must be set to five or seven seconds and the time to send the cue signal must be set to three seconds before the IN point on the RM-450. When starting to edit, the recorder and the player are prerolled five or seven seconds before the IN point. At the IN point, the picture from the recorder (FRGD bus picture) is frozen and the effect is started. At the same time, the recorder starts recording.

• Note

When editing by using the DME-450P with the RM-440, set the preroll time to five seconds on the RM-440. (The cue signal will be sent five seconds before the IN point.)



• Tow-VCR editing



Preparation

Set the RM-450 as follows.

Set the PREROLL selector on RM-450 (preroll time) to five or seven seconds. Set the SYSTEM PRESET switches so that the cue signal will be sent three seconds before the IN point. Note that only the above preroll time and the cue signal out timing allow you to execute the correct editing.

Operations on the DME-450P

- 1** Select the picture for the recorder with the FRGD bus button and the picture for the player with the BKGD bus button.
- 2** Select the effect.
- 3** Select the transition duration by using the buttons for TRANSITION SPEED.

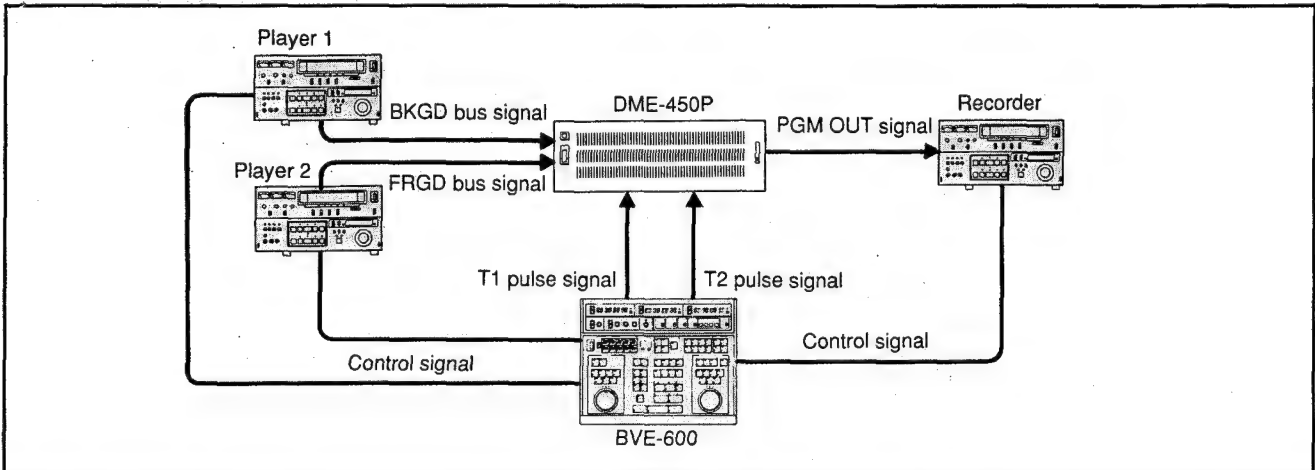
Operations on the RM-450

- 4** Set the IN point and the OUT point of the BKGD bus picture on the PLAYER side.
- 5** Set the IN point of the FRGD bus picture on the RECORDER side.
- 6** Press the PREVIEW button to monitor the picture on which the effect is to be made before executing the effect, if required.
- 7** Press the AUTO EDIT/END button to execute the effect.

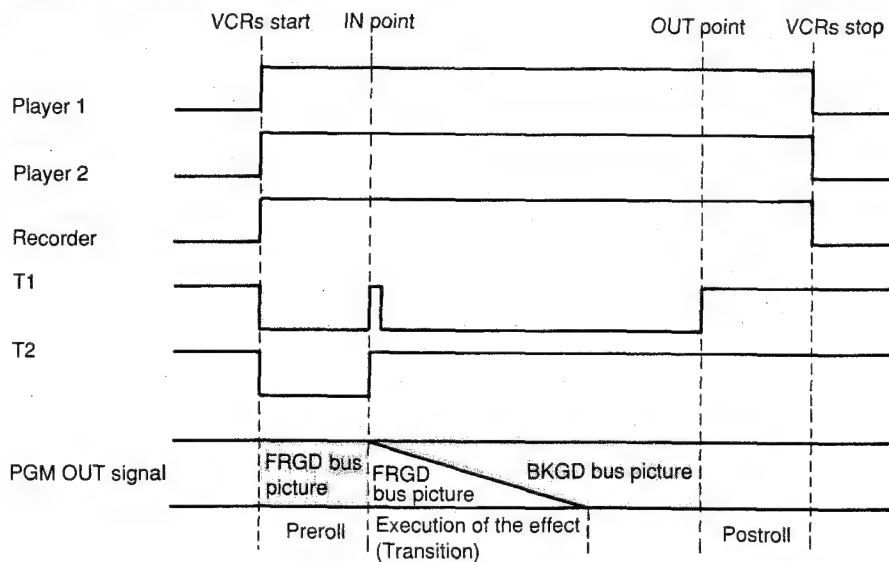
2-4-2. Control from a BVE-600 Editing Control Unit

Using this unit with the BVE-600 editing control unit allows A/B roll editing with two players and one recorder. The execution of the effect selected on the DME-450P can be controlled from the BVE-600, with the T1 and T2 pulse signals.

• A/B roll editing



Timing chart of T1 and T2 pulse signals



Notes on operating the BVE-600

- For A/B roll editing with the BVE-600, set the duration of the A roll to 0 (namely, do not designate the OUT point of the A roll, so that the effect starts immediately from the IN point). Also, set the FRGD FREEZE selector on the DME-450P to OUT (not frozen).
- For A roll editing with the BVE-600, set the FRGD FREEZE selector on the DME-450P to IN (frozen).

2-4-3. Control from a BVE-900 Editing Control Unit

Using this unit with the BVE-900 editing control unit allows A/B roll editing.

• Data setting

When editing using with the BVE-900, the crosspoint, effect number and transition duration can be selected on the BVE-900. Set the crosspoint, effect number and transition duration on the BVE-900 as follows:

Selection of the crosspoint

DME-450P	1	2	3	COLOR BKGD
BVE-900	01	02	03	04

Selection of the effects

You can select the effect by using the effect numbers of the DME-450P. Set the effect number, referring to "Effect pattern list" on pages 1-35 to 1-48.

Selection of the transition duration

The transition durations which have been set on the BVE-900 are read out on the DME-450P as follows:

Setting value on the BVE-900	Setting value on the DME-450P and indication	
0 to 19 frames	13 frames	FAST lights up.
20 to 25 frames	20 frames	FAST/MID light up.
26 to 39 frames	26 frames	MID lights up.
40 to 79 frames	40 frames	SLOW/MID light up.
80 frames and over	80 frames	SLOW lights up.

• Notes on the editing points

- For A/B roll editing with the use of the BVE-900, set the duration of the A roll to 0 (namely, do not designate the OUT point of the A roll, so that the effect starts immediately from the IN point).
- To select whether or not to freeze the FRGD bus picture, use the FRGD FREEZE selector on the DME-450P (refer to page 1-3.)

2-4-4. Control from a BVS-3000 Series Video Switcher

When using with the BVS-3000 series video switcher, the followings can be controlled from the BVS-3000 series video switcher.

- Digital multi-effects of the DME-450P can be added to the effects of the BVS-3000 series video switcher.
- All the functions of the controls and buttons except for those of the FRGD FREEZE selector and TITLE button on the control panel can be controlled from the BVS-3000 series video switcher through the 9-pin serial interface.
- When selecting the effect with the effect number "1100", the execution of the effect can be controlled manually with the fader lever and positioner on the BVS-3000 series video switcher.

For details, refer to the operation manual for the BVS-3000 series video switcher.

2-5. CONNECTION CONNECTOR

When external cables are connected to the various connectors on the connector panel during maintenance, the hardware listed below (or equivalents) should be used.

Panel Indication	Connection Connector
COMPONENT VIDEO IN (BVS-3200C)	1-562-159-00 Plug, 12 (F)
COMPONENT VIDEO OUT (BVS-3200C)	1-560-995-00 Plug, 12 (M)
CONTROL PANEL	1-564-747-11 D-SUB, Plug, 25P (M)
SWITCHER/EDITOR	1-560-651-00 D-SUB, Plug, 9P (M) or 1-561-749-00 Junction Shell 9P (M)
VIDEO IN 1, 2, 3 T1/CUE T2 KEY OUT PGM OUT 1, 2 SYNC OUT 1, 2, 3	1-560-069-11 BNC, Plug (M)

2-6. INPUT/OUTPUT SIGNALS

- COMPOSITE VIDEO IN 1, 2, 3

BNC,

Input impedance : 75 Ω

Input Amplitude : 1.0Vp-p, Sync Negative

- COMPONENT VIDEO IN

Plug, 12pin, Male



EXTERNAL VIEW

Pin no.	Signal	Function	Specifications
1	Y IN	Luminance Input	Input impedance : 75 Ω Input Amplitude : 1.0Vp-p Sync Negative
2	GND	Luminance Input Common	
3	R-Y IN	Chrominance R-Y Input	Input impedance : 75 Ω Input Amplitude : 0.525Vp-p (100/0/75/0 Color Bars)
4	GND	R-Y Input Common	
5	B-Y IN	Chrominance B-Y Input	
6	GND	B-Y Input Common	
7	NOT USED	—	—
8	NOT USED	—	—
9	REF IN	Reference Black Burst Input	Input impedance : 75 Ω Input Amplitude : 0.286Vp-p
10	GND	Black Burst input Common	
11	NOT USED	—	—
12	NOT USED	—	—

- T1/CUE/T2 IN

BNC,

Input : "TTL" Levels

- SYNC OUT1, 2, 3

BNC,

Output Impedance : 75 Ω

Output Amplitude : 2.5 \pm 0.1Vp-p, Sync Negative

- PGM (Program) OUT 1, 2

BNC,

Output Impedance : 75 Ω

Output Amplitude : 1.0 \pm 0.05Vp-p

- KEY OUT

BNC,

Output Impedance : 75 Ω

Output Amplitude : 1.0 \pm 0.05Vp-p

- COMPONENT VIDEO OUT
Plug, 12Pin, Female

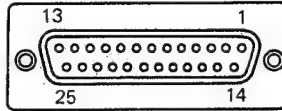


EXTERNAL VIEW

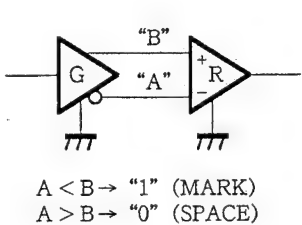
Pin No.	Signal	Function	Specifications
1	Y OUT	Luminance Output	Output Impedance : 75 Ω Output Amplitude (Without sync) : 0.70 \pm 0.01Vp-p
2	GND	Luminance Output Common	
3	R-Y OUT	Chrominance R-Y Output	Output Impedance : 75 Ω Output Amplitude : 0.525Vp-p (100/0/75/0 Color Bars)
4	GND	R-Y Output Common	
5	B-Y OUT	Chrominance B-Y Output	
6	GND	B-Y Output Common	
7	NOT USED	—	—
8	NOT USED	—	—
9	NOT USED	—	—
10	NOT USED	—	—
11	NOT USED	—	—
12	NOT USED	—	—

• CONTROL PANEL CONNECTOR (PROCESS UNIT)

D-SUB, 25 Pin, Female

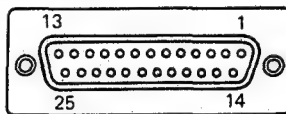


EXTERNAL VIEW

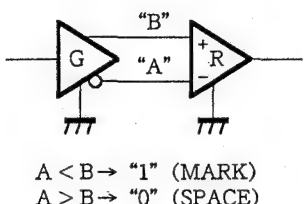
Pin No.	Signal	Function	A, B Definition
1	FG	Frame Ground	 <p> $A < B \rightarrow "1" \text{ (MARK)}$ $A > B \rightarrow "0" \text{ (SPACE)}$ </p>
2	+ 12V	REG 12V Output	
3	P RCV "B"	Receive "B"	
4	P RCV GND	Receive Common	
5	P MIT "B"	Transmit "B"	
6	NOT USED	——	
7	NOT USED	——	
8	NOT USED	——	
9	NOT USED	——	
10	NOT USED	——	
11	NOT USED	——	
12	GND	Ground	
13	GND	Ground	
14	+ 12V	REG 12V Output	
15	+ 12V	REG 12V Output	
16	P RCV "A"	Receive "A"	
17	P MIT GND	Transmit Common	
18	P MIT "A"	Transmit "A"	
19	NOT USED	——	
20	NOT USED	——	
21	NOT USED	——	
22	NOT USED	——	
23	NOT USED	——	
24	NOT USED	——	
25	NOT USED	——	

• CONTROL PANEL CONNECTOR (CONSOLE UNIT SIDE)

D-SUB, 25 Pin, Female

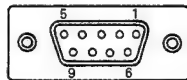


EXTERNAL VIEW

Pin No.	Signal	Function	A, B Definition
1	FG	Frame Ground	 <p>A < B → "1" (MARK) A > B → "0" (SPACE)</p>
2	+ 12V	REG 12V Input	
3	C MIT "B"	Transmit "B"	
4	C MIT GND	Transmit Common	
5	C RCV "B"	Receive "B"	
6	NOT USED	——	
7	NOT USED	——	
8	NOT USED	——	
9	NOT USED	——	
10	NOT USED	——	
11	NOT USED	——	
12	GND	Ground	
13	GND	Ground	
14	+ 12V	REG 12V Input	
15	+ 12V	REG 12V Input	
16	C MIT "A"	Transmit "A"	
17	C RCV GND	Receive Common	
18	C RCV "A"	Receive "A"	
19	NOT USED	——	
20	NOT USED	——	
21	NOT USED	——	
22	NOT USED	——	
23	NOT USED	——	
24	NOT USED	——	
25	NOT USED	——	

• SWITCHER/EDITOR CONNECTOR

D-SUB, 9 Pin, Female



EXTERNAL VIEW

Pin No.	Signal	Function	A, B Definition
1	GND	Frame Ground	<p> $A < B \rightarrow "1" \text{ (MARK)}$ $A > B \rightarrow "0" \text{ (SPACE)}$ </p>
2	X MIT -	Receive "A"	
3	RCV +	Transmit "B"	
4	GND	Transmit Common	
5	NOT USED	_____	
6	GND	Receive Common	
7	X MIT +	Receive "B"	
8	RCV -	Transmit "A"	
9	GND	Frame Ground	

2-7. SPARE PARTS

(1)

The shaded and Δ -marked components are critical to safety. Replace only with same components as specified.

- (2) Replacement Parts supplied from the Sony Parts Center will sometimes have a different shape from the original parts. This is due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts". This manual's exploded views and electrical spare parts list indicate the part numbers of "the standardized genuine parts at the present". Regarding engineering part changes in our engineering department, refer to Sony service bulletins and service manual supplements.
- (3) The parts marked with "s" in the SP column of the exploded views and electrical spare parts list are normally stocked for replacement purposes. The parts marked with "o" in the SP column are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow for additional delivery time.

2-8. FIXTURE

The following is available for the alignment of the DME-450P.

Part No.	Description
J-6180-960-A	Extension Board for DME-450P

SECTION 3

ELECTRICAL ALIGNMENT

[Required Equipment]

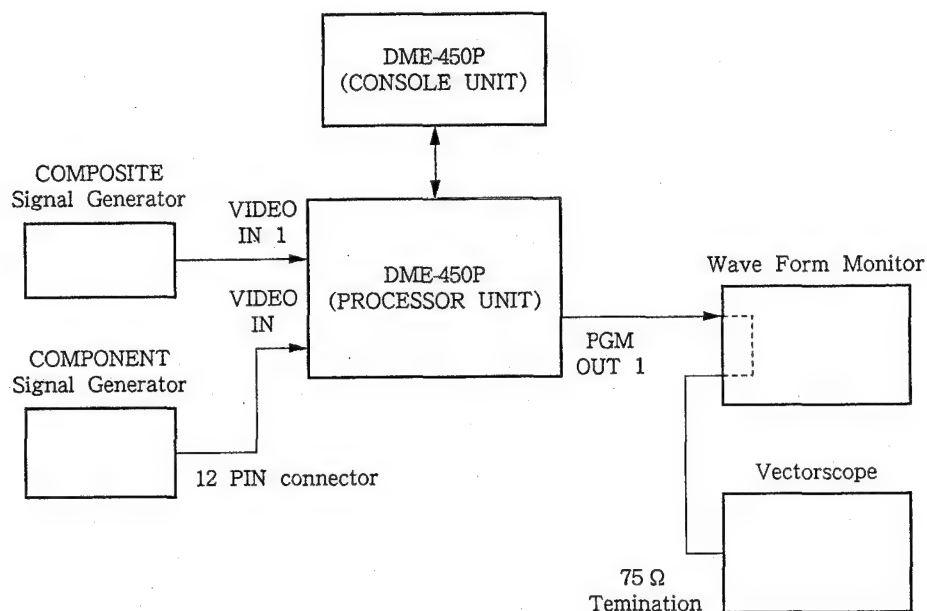
- Oscilloscope
- NTSC COMPOSITE Signal Generator
 - : TEKTRONIX 1411 or equivalents
- NTSC COMPONENT Signal Generator
 - : TEKTRONIX TSG-300 or equivalents
- Vectorscope
 - : TEKTRONIX 521 or equivalents
- NTSC Waveform Monitor
 - : TEKTRONIX 1485 or equivalents
- Frequency Counter
- Digital Voltage Meter

[CONNECTION]

There are three VIDEO IN connectors, (VIDEO IN 1, 2 and 3).

The VIDEO IN 1 should be used unless otherwise specified.

Set the select switches (on the console unit) of "BKGD BUS" and "FRGD BUS" to "1".



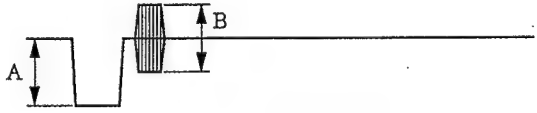
3-1. AD-44P BOARD ALIGNMENT

NOTE

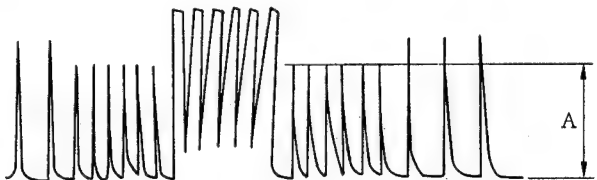
* 1 : BOARD Suffix -11

* 2 : BOARD Suffix -12

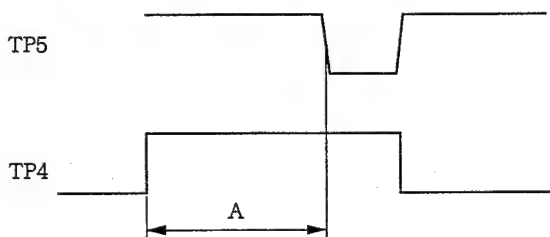
3-1-1. Internal Black Burst Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • S1/AD-44P (H-10) : COMPOSITE IN • S2/AD-44P (E-10) : INT. SYNC 	<p>CH1 : TP18/AD-44P (L-5)</p>  <p> $A = 0.30 \pm 0.01V$ $B = 0.30 \pm 0.01V$ </p>	<p>A : SYNC LEVEL ●RV6/AD-44P (C-7)^{*1} (C-8)^{*2}</p> <p>B : BURST LEVEL ●RV31/AD-44P (C-7)</p> <p>TRIG : CH1</p>

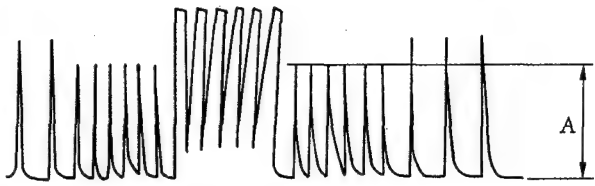
3-1-2. Integrated Half H Level Adjustment (BKGD Bus)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	<p>CH1 : TP6/AD-44P (K-7)^{*1} (L-7)^{*2}</p>  <p> $A = 4.1 \pm 0.1V$ </p>	<p>●RV2/AD-44P (K-7)^{*1} (L-7)^{*2}</p> <p>TRIG : VD/SIGNAL GENERATOR</p>

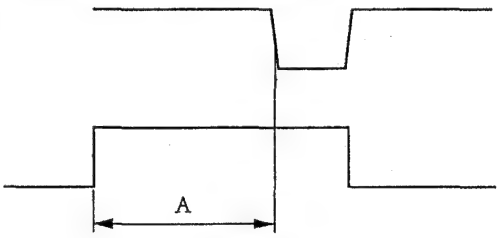
3-1-3. H Sync Gate Pulse Adjustment (BKGD Bus)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	<p>CH1 : TP5/AD-44P (K-9) CH2 : TP4/AD-44P (K-9)^{*1} (L-8)^{*2}</p>  <p> $A = 4.5 \pm 0.5 \mu s$ </p>	<p>●RV1/AD-44P (L-9)^{*1} (M-9)^{*2}</p> <p>TRIG : CH1</p>

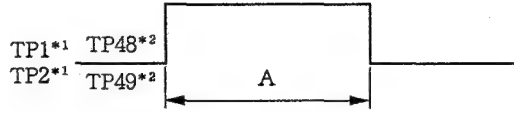
3-1-4. Integrated Half H Level Adjustment (FRGD Bus)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	CH1 : TP14/AD-44P (L-7)* ¹ (M-7)* ²  $A = 4.1 \pm 0.1V$	⚙️RV4/AD-44P (L-7)* ¹ (M-7)* ² TRIG : VD/SIGNAL GENERATOR

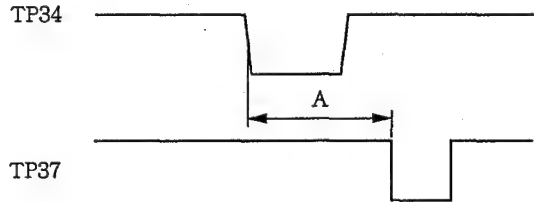
3-1-5. H Sync Gate Pulse Adjustment (FRGD Bus)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	CH1 : TP13/AD-44P (L-9)* ¹ (M-8)* ² CH2 : TP12/AD-44P (L-9)* ¹ (M-8)* ²  $A = 4.5 \pm 0.5 \mu s$	⚙️RV3/AD-44P (K-9)* ¹ (L-9)* ² TRIG : CH1

3-1-6. Field Odd/Even Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	CH1 : TP1/DUS-311* ¹ TP48/AD-44P (M-10)* ² CH2 : TP2/DUS-311* ¹ TP49/AD-44P (K-10)* ²  $A = 40 \pm 2 \mu s$	⚙️RV1/DUS-311* ¹ ⚙️RV2/DUS-311* ¹ ⚙️RV34/AD-44P (M-10)* ² ⚙️RV35/AD-44P (M-10)* ² TRIG : CH1

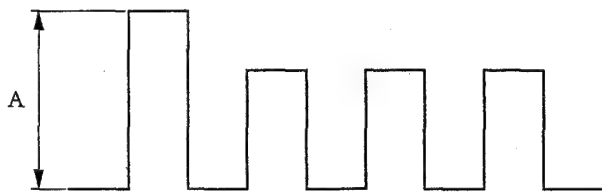
3-1-7. Decoder Clamp Pulse Timing Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	CH1 : TP34/AD-44P (G-7) CH2 : TP37/AD-44P (G-8)  $A = 5.6 \pm 0.1 \mu s$	●RV21/AD-44P (G-9) TRIG : CH1

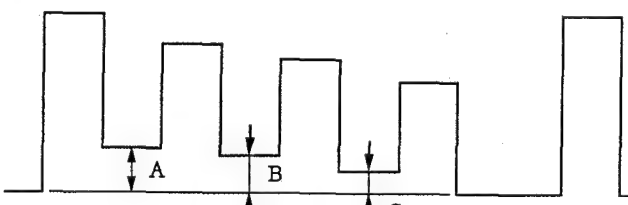
3-1-8. Decoder Frequency Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • Set the jumper plug COR2 (G-8) /AD-44P to the right*¹ or 2*². • After the adjustment is completed, set the COR2 to the left*¹ or 1*². 	Frequency Counter : TP36/AD-44P (F-8) $4433618 \pm 300\text{Hz}$	●RV20/AD-44P (G-9)

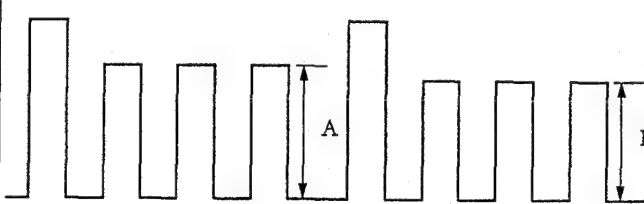
3-1-9. Decoder Y Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	CH1 : TP43/AD-44P (F-7)* ¹ (E-6)* ²  $A = 1.00 \pm 0.02V$	●RV16/AD-44P (H-6) TRIG : CH1

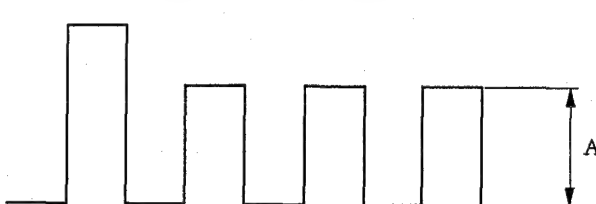
3-1-10. Decoder DL Amp Adjustment (1)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	<p>CH1 : TP43/AD-44P (F-7)*¹ (E-6)*²</p>  <p>Minimize A, B and C</p>	<p>●RV18/AD-44P (E-8)*¹ (E-9)*²</p> <p>TRIG : CH1</p>

3-1-11. Decoder DL Amp Adjustment (2)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	<p>CH1 : TP43/AD-44P (F-7)*¹ (E-6)*²</p>  <p>A = B</p>	<p>●LV1/AD-44P (E-8)</p> <p>TRIG : CH1</p>

3-1-12. Decoder Chrominance Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	<p>CH1 : TP43/AD-44P (F-7)*¹ (E-6)*²</p>  <p>A = 0.75 ± 0.02V</p>	<p>●RV22/AD-44P (F-7)</p> <p>TRIG : CH1</p>

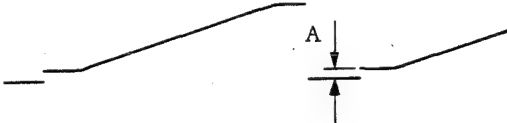
3-1-13. Pedestal Clamp Voltage Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	Digital Voltage Meter : TP45/AD-44P (D-3) $-1.50 \pm 0.01V$	●RV26/AD-44P (D-4)* ¹ (E-4)* ²

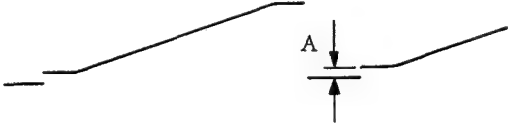
3-1-14. A/D Converter Reference Voltage Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	Digital Voltage Meter : TP46/AD-44P (D-3) $3.00 \pm 0.01V$	●RV27/AD-44P (D-4)* ¹ (E-3)* ²

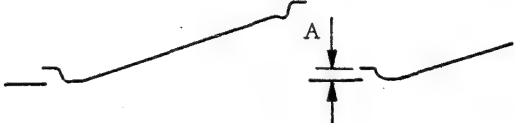
3-1-15. Red Channel Video Level Adjustment (1)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : LINEARITY (SUBCARRIER : 20IRE) • S1/AD-44P (H-10) : COMPOSITE IN • Console Unit : Push the "TAKE" switch and select the FRGD. 	CH1 : TP8/DA-33P (L-7)* ¹ (L-1)* ²  Minimize A	●RV23/AD-44P (H-3) TRIG : CH1

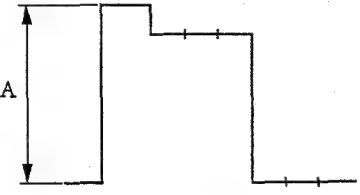
3-1-16. Green Channel Video Level Adjustment (1)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN: LINEARITY (SUBCARRIER: 20IRE) • S1/AD-44P (H-10): COMPOSITE IN • Console Unit: Push the "TAKE" switch and select the FRGD. 	CH1: TP7/DA-33P (K-7)* ¹ (K-1)* ²  Minimize A	●RV24/AD-44P (F-3)* ¹ (G-3)* ² TRIG: CH1

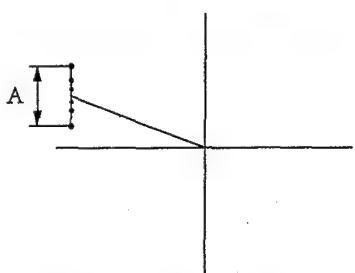
3-1-17. Blue Channel Video Level Adjustment (1)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN: LINEARITY (SUBCARRIER: 20IRE) • S1/AD-44P (H-10): COMPOSITE IN • Console Unit: Push the "TAKE" switch and select the FRGD. 	CH1: TP6/DA-33P (K-7)* ¹ (K-1)* ²  Minimize A	●RV25/AD-44P (E-3)

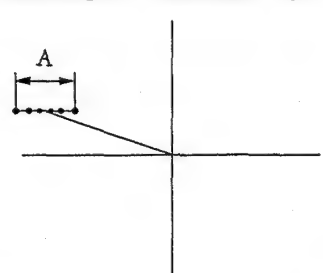
3-1-18. Green Channel Video Level Adjustment (2)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN: 75% Color Bars Signal • S1/AD-44P (H-10): COMPOSITE IN 	CH1: TP51 (F-5)  $A = 0.5 \pm 0.01V$	●RV36/AD-44P (E-5)* ² TRIG: CH1

3-1-19. Red Channel Video Level Adjustment (2)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : LINEARITY (SUBCARRIER : 20IRE) • S1 / AD-44P (H-10) : COMPOSITE IN • Console Unit : Push the "TAKE" switch and select the FRGD. 	PGM OUT (Vectorscope : Terminated by 75 Ω)  Minimize the size of spots "A"	● RV32 / AD-44P (G-5) ^{*1} (F-5) ^{*2}

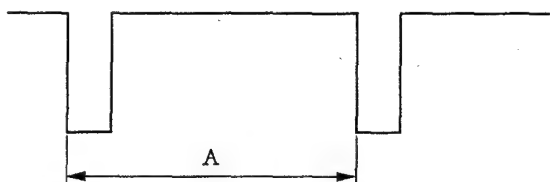
3-1-20. Blue Channel Video Level Adjustment (2)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : LINEARITY (SUBCARRIER : 20IRE) • S1 / AD-44P (H-10) : COMPOSITE IN • Console Unit : Push the "TAKE" switch and select the FRGD video as a PGM output. 	PGM OUT (Vectorscope : Terminated by 75 Ω)  Minimize the size of spots "A"	● RV33 / AD-44P (D-5)

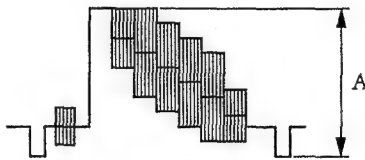
3-1-21. Title Key Slice Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1 / AD-44P (H-10) : COMPOSITE IN 	Digital Voltage Meter : TP33 / AD-44P (H-7) $0.14 \pm 0.01V_{pc}$	● RV17 / AD-44P (B-10)

3-1-22. AFC Adjustment (Variable Speed Mode)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • Set the jumper plug COR1 (H-10) to the front*¹ or 2*². • After the adjustment is completed, set the jumper plug to the back*¹ or 1*². 	<p>CH1 : TP24/AD-44P (H-10)</p>  <p>$A = 64.0 \pm 0.1 \mu s$</p>	<p>●RV9/AD-44P (G-10)*¹ (H-10)*²</p>

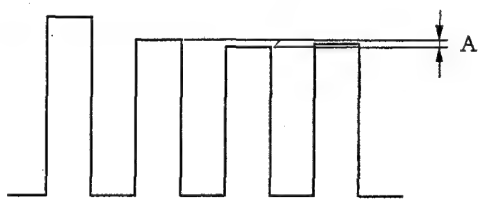
3-1-23. EXT Reference Output Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • S2/AD-44P (E-10) : EXT REF OUT 	<p>SYNC OUT 1 (Terminated by 75 Ω)</p>  <p>$A = 1.00 \pm 0.02V$</p>	<p>●RV8/AD-44P (H-8)*¹ (J-8)*²</p> <p>TRIG : CH1</p>

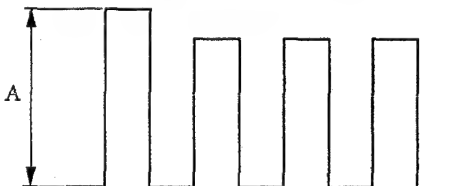
3-1-24. 4Fsc Frequency Adjustment (For Internal Sync)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • S2/AD-44P (E-10) : INT. SYNC 	<p>Frequency Counter : TP17/AD-44P (B-5)*¹ (B-6)*²</p> <p>$17734475 \pm 300Hz$</p>	<p>●RV29/AD-44P (A-5)</p>

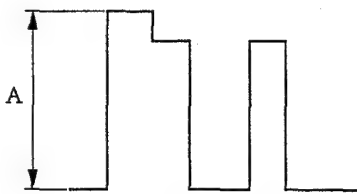
3-1-25. Blue Balance Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN (12 PIN CONNECTOR) : 100/0/75/0 • S1/AD-44P (H-10) : COMPONENT IN 	<p>CH1 : Q39 Emitter/AD-44P (B-4)*¹ TP43/AD-44P (E-6)*²</p>  <p>Minimize A</p>	<p>●RV12/AD-44P (C-3)</p> <p>TRIG : CH1</p>

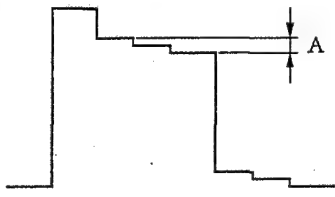
3-1-26. Blue Channel Video Level Adjustment (3)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN (12 PIN CONNECTOR) : 100/0/75/0 • S1/AD-44P (H-10) : COMPONENT IN 	<p>CH1 : Q39 Emitter/AD-44P (B-4)*¹ TP43/AD-44P (E-6)*²</p>  <p>$A = 1.000 \pm 0.005V_{p-p}$</p>	<p>●RV15/AD-44P (B-4)</p> <p>TRIG : CH1</p>

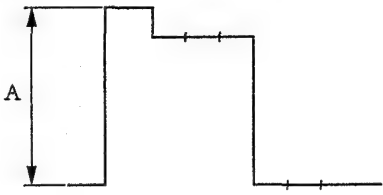
3-1-27. Red Channel Video Level Adjustment (3)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN (12 PIN CONNECTOR) : 100/0/75/0 • S1/AD-44P (H-10) : COMPONENT IN 	<p>CH1 : Q32 Emitter/AD-44P (C-4)*¹ TP38/AD-44P (G-6)*²</p>  <p>$A = 1.000 \pm 0.005V_{p-p}$</p>	<p>●RV13/AD-44P (C-4)</p> <p>TRIG : CH1</p>

3-1-28. Green Blance Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN (12 PIN CONNECTOR) : 100/0/75/0 • S1/AD-44P (H-10) : COMPONENT IN 	CH1 : Q36 Emitter/AD-44P (C-4)* ¹ TP41/AD-44P (F-6)* ²  Minimize A	●RV28/AD-44P (B-3)* ¹ (B-4)* ² TRIG : CH1

3-1-29. Green Level Adjustment (3)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN (12 PIN CONNECTOR) : 100/0/75/0 • S1/AD-44P (H-10) : COMPONENT IN 	CH1 : Q36 Emitter/AD-44P (B-5)* ¹ TP41/AD-44P (F-6)* ²  $A = 1.000 \pm 0.005V_{p-p}$	●RV14/AD-44P (B-4) TRIG : CH1

3-2. DA-33P BOARD ALIGNMENT

NOTE

* 1 : BOARD Suffix -11

* 2 : BOARD Suffix -12

3-2-1. Key D/A Converter Reference Voltage Adjustment

machine conditions for adjustment	specifications	adjustments
	Digital Voltage Meter : TP31/DA-33P (L-6)* ¹ (L-5)* ² $+ 0.840 \pm 0.005V$	RV3/DA-33P (L-6)* ¹ (K-5)* ²

3-2-2. Key Reference Voltage Adjustment

machine conditions for adjustment	specifications	adjustments
	Digital Voltage Meter : TP20/DA-33P (H-7)* ¹ (H-6)* ² $- 5.00 \pm 0.05V$	RV14/DA-33P (G-7)

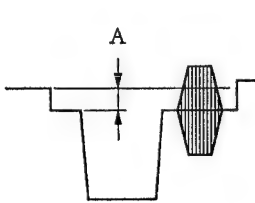
3-2-3. Key Output Pedestal Adjustment

machine conditions for adjustment	specifications	adjustments
	Digital Voltage Meter : TP27/DA-33P (H-8)* ¹ (H-7)* ² $- 1.00 \pm 0.05V$	RV21/DA-33P (J-5)

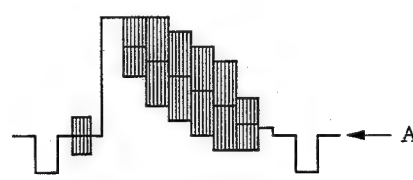
3-2-4. Key Output Level Adjustment

machine conditions for adjustment	specifications	adjustments
	Digital Voltage Meter : TP34/DA-33P (G-7)* ¹ (F-6)* ² $-0.230 \pm 0.005V$	●RV15/DA-33P (G-8)* ¹ (G-7)* ²

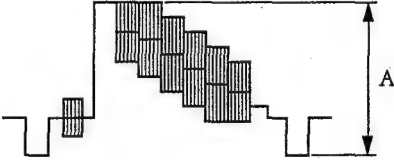
3-2-5. M/E Amplifier Offset Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75 % Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • Console Unit Settings : EFFECT : MIX TRANSITION : SLOW <p>Push the "TAKE" switch twice, and perform this adjustment during MIX TRANSITION period.</p>	CH1 : PGM OUT (Terminated by 75 Ω)  $A \leq 30mV$	●RV8/DA-33P (F-7) TRIG : CH1

3-2-6. PGM Output Pedestal Adjustment (BKGD Bus)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75 % Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	CH1 : TP17/DA-33P (G-10)* ¹ (G-9)* ²  $A = 0 \pm 0.02V$	●RV9/DA-33P (F-8) TRIG : CH1

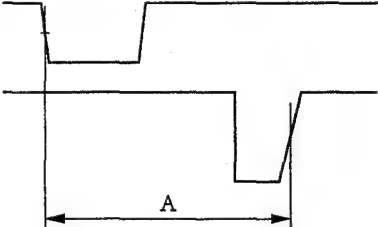
3-2-7. PGM Output Level Adjustment (BKGD Bus)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	CH1 : TP17/DA-33P (G-10)* ¹ (G-9)* ²  $A = 2.00 \pm 0.02V$	●RV10/DA-33P (G-9) TRIG : CH1

3-2-8. R.G.B D/A Convertor Reference Voltage Adjustment

machine conditions for adjustment	specifications	adjustments
	Digital Voltage Meter : TP30/DA-33P (J-8) $+ 0.870 \pm 0.005V$	●RV2/DA-33P (J-7)* ¹ (J-8)* ²

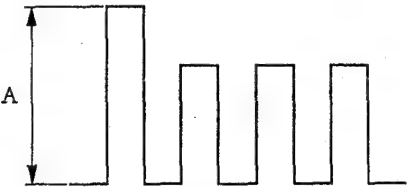
3-2-9. Encoder Clamp Pulse Timing Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	CH1 : TP13/DA-33P (E-9)* ¹ (E-8)* ² CH2 : TP12/DA-33P (D-8)* ¹ (D-7)* ²  $A = 7.0 \pm 0.1 \mu s$	●RV5/DA-33P (D-8) TRIG : CH1

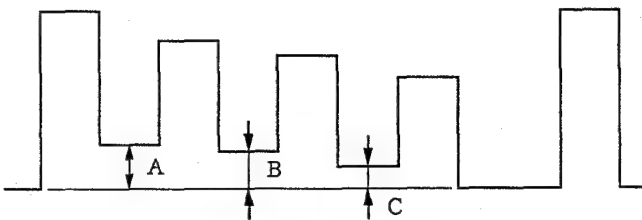
3-2-10. SC (Subcarrier) Frequency Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • Set the jumper plug COR1 (D-8) to the right*¹ or 2*². • After the adjustment is completed, set the jumper plug COR1 to the left*¹ or 1*². 	<p>Frequency Counter : TP32/DA-33P (D-8)*¹ (D-7)*²</p> <p>4433618 ± 300Hz</p>	<p>● RV23/DA-33P (D-9)*¹ (D-8)*²</p>

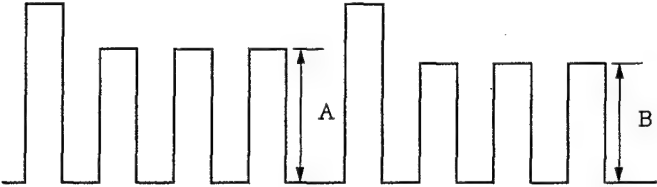
3-2-11. SC Generator Input Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • 0% SET UP • S1/AD-44P (H-10) : COMPOSITE IN 	<p>CH1 : TP33/DA-33P (C-8)*¹ (B-7)*²</p>  <p>A = 1.00 ± 0.02V</p>	<p>● RV4/DA-33P (C-10)*¹ (C-9)*²</p> <p>TRIG : CH1</p>

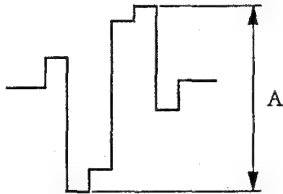
3-2-12. SC Generator DL Amp Adjustment (1)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	<p>CH1 : TP33/DA-33P (C-8)*¹ (B-7)*²</p>  <p>Minimize A, B and C</p>	<p>● RV6/DA-33P (B-8)</p> <p>TRIG : CH1</p>


3-2-13. SC Generator DL Amp Adjustment (2)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	<p>CH1 : TP33/DA-33P (C-8)*¹ (B-7)*²</p>  <p>A = B</p>	<p>● LV1/DA-33P (B-8)*¹ (B-7)*²</p> <p>TRIG : CH1</p>

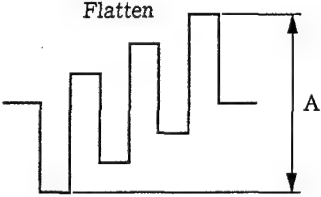
3-2-14. R-Y Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • Console Unit : Push the "TAKE" switch and select the FRGD. 	<p>CH1 : TP21/DA-33P (G-2)*¹ (D-2)*²</p>  <p>$A = 0.60 \pm 0.05V$</p>	<p>● RV16/DA-33P (K-2)*¹ (E-2)*²</p> <p>TRIG : CH1</p>

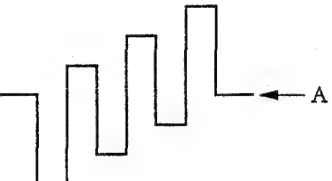
3-2-15. R-Y Pedestal Adjustment (1)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • Console Unit : Push the "TAKE" switch and select the FRGD. 	<p>CH1 : TP21/DA-33P (G-2)*¹ (D-2)*²</p>  <p>$A = 0 \pm 0.005V$</p>	<p>● RV17/DA-33P (G-2)*¹ (D-3)*²</p> <p>TRIG : CH1</p>

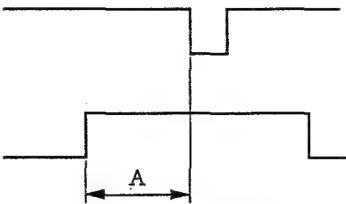
3-2-16. B-Y Level Adjustment (1)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • Console Unit : Push the "TAKE" switch and select the FRGD. 	CH1 : TP25/DA-33P (G-3)* ¹ (D-3)* ²  $A = 0.430 \pm 0.005V$	●RV19/DA-33P (K-3)* ¹ (E-3)* ² TRIG : CH1

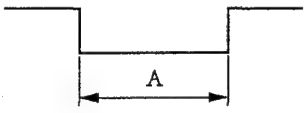
3-2-17. R-Y Pedestal Adjustment (2)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • Console Unit : Push the "TAKE" switch and select the FRGD. 	CH1 : TP25/DA-33P (G-3)* ¹ (D-3)* ²  $A = 0 \pm 0.005V$	●RV20/DA-33P (G-3)* ¹ (D-4)* ² TRIG : CH1

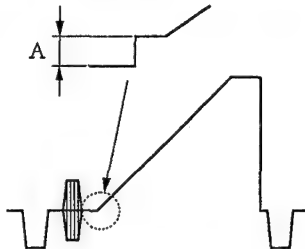
3-2-18. H BLKG (Blanking) Phase Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	CH1 : TP28/DA-33P (D-6)* ¹ (M-5)* ² CH2 : TP29/DA-33P (K-10)* ¹ (L-4)* ²  $A = 2.0 \pm 0.1 \mu s$	●RV1/DA-33P (B-4)* ¹ (K-2)* ² TRIG : CH1

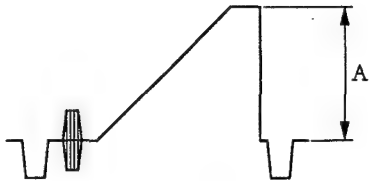
3-2-19. H BLKG Width Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN 	CH1 : TP35/DA-33P (B-2)* ¹ (M-2)* ²  $A = 11 \pm 0.1 \mu s$	● RV28/DA-33P (B-2)* ¹ (M-2)* ² TRIG : CH1

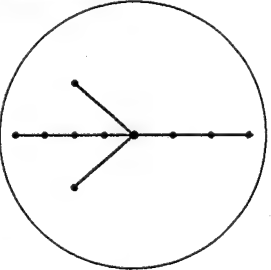
3-2-20. PGM Output Pedestal Level Adjustment (FRGD Bus)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : RAMP • S1/AD-44P (H-10) : COMPOSITE IN • Console Unit : Push the "TAKE" switch and select the FRGD bus as a PGM output. 	CH1 : PGM OUT (Terminated by 75 Ω)  Minimize A	● RV13/DA-33P (F-5) TRIG : CH1

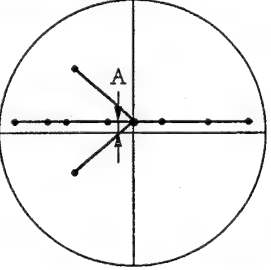
3-2-21. PGM Output Level Adjustment (FRGD Bus)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : RAMP • S1/AD-44P (H-10) : COMPOSITE IN • Console Unit : Push the "TAKE" switch and select the FRGD bus as a PGM output. 	CH1 : PGM OUT (Terminated by 75 Ω)  $A = 0.7 \pm 0.01 V$	● RV11/DA-33P (G-4)* ¹ (E-2)* ²

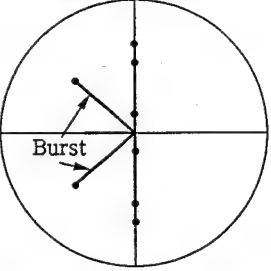
3-2-22. Encoder U-Axis Phase Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • Set the R-Y switch on the COMPOSITE signal generator to OFF. 	PGM OUT (Vectorscope)  Adjust the phase so that the spots are parallel to horizontal line.	●RV18/DA-33P (D-2) ^{*1} (E-4) ^{*2}

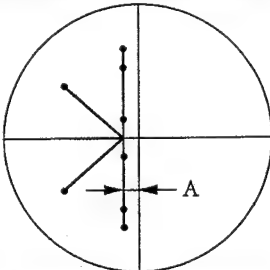
3-2-23. R-Y Pedestal Adjustment (2)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • Set the R-Y switch on the COMPOSITE signal generator to OFF. • Console Unit : Push the "TAKE" switch and select the FRGD video as a PGM output. 	PGM OUT (Vectorscope : Terminated by 75 Ω)  Adjust the spots to the horizontal line. Minimize A	●RV17/DA-33P (G-2) ^{*1} (D-3) ^{*2}

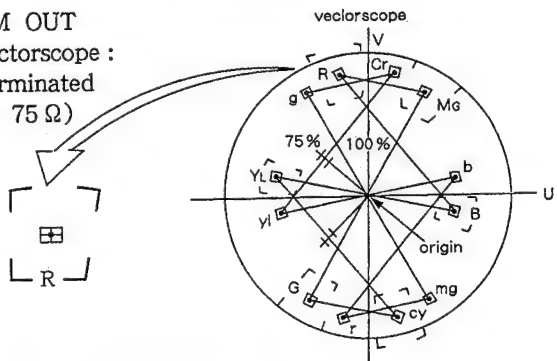
3-2-24. Encoder V Subcarrier Phase Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • Set the B-Y switch on the COMPOSITE signal generator to OFF. • Console Unit : Push the "TAKE" switch and select the FRGD video as a PGM output. 	PGM OUT (Vectorscope : Terminated by 75 Ω)  Adjust the phase so that the spots are parallel to vertical line.	●LV2/DA-33P (F-3) ^{*1} (C-4) ^{*2}

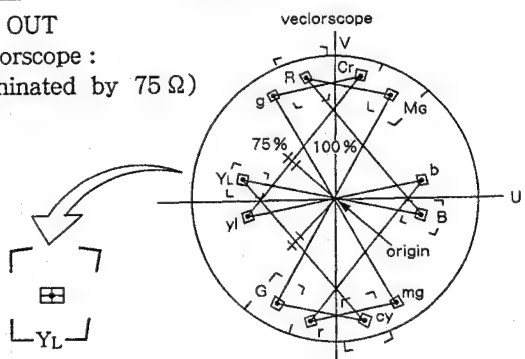
3-2-25. B-Y Pedestal Adjustment (2)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • Set the B-Y switch on the COMPOSITE signal generator to OFF. • Console Unit : Push the "TAKE" switch and select the FRGD video as a PGM output. 	PGM OUT (Vectorscope : Terminated by 75 Ω)  Adjust the spots to the vertical line. Minimize A	●RV20/DA-33P (G-3)* ¹ (D-4)* ²

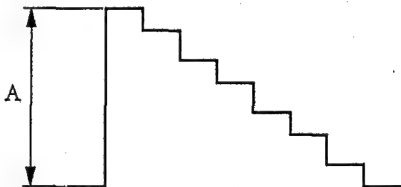
3-2-26. Chrominance Level Adjustment (FRGD Bus)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • Console Unit : Push the "TAKE" switch and select the FRGD video as a PGM output. 	PGM OUT (Vectorscope : Terminated by 75 Ω)  Adjust the level so that the R spot is placed inside the "田" frame.	●RV12/DA-33P (F-4)* ¹ (E-2)* ²

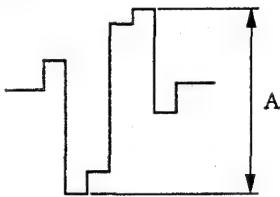
3-2-27. Chrominance Y_L (Yellow) Level Adjustment (FRGD Bus)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN : 75% Color Bars Signal • S1/AD-44P (H-10) : COMPOSITE IN • Console Unit : Push the "TAKE" switch and select the FRGD video as a PGM output. 	PGM OUT (Vectorscope : Terminated by 75 Ω)  Adjust the level so that the Y _L spot is located inside the "田" frame.	●RV19/DA-33P (K-3)* ¹ (E-3)* ²

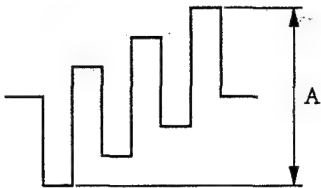
3-1-28. Y Level Adjustment (COMPONENT Mode)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN (12 PIN CONNECTOR) : 100/0/100/0 Luminance 700mV CHROMINANCE ± 350mV • S1/AD-44P (H-10) : COMPONENT IN • Console Unit : Push the "TAKE" switch and select the FRGD. 	CN12-10A/DA-33P (K-10)* ¹ TP37/DA-33P (J-3)* ²  $A = 1.400 \pm 0.025V$	●RV25/DA-33P (H-4)* ¹ (H-2)* ² TRIG : CH1

3-2-29. R-Y Level Adjustment (COMPONENT Mode)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN (12 PIN CONNECTOR) : 100/0/100/0 Luminance 700mV CHROMINANCE ± 350mV • S1/AD-44P (H-10) : COMPONENT IN 	CH1 : CN12-9A/DA-33P (K-10)* ¹ TP38/DA-33P (J-4)* ²  $A = 0.70 \pm 0.02V$	●RV26/DA-33P (H-2)* ¹ (H-3)* ² TRIG : CH1

3-2-30. B-Y Level Adjustment (COMPONENT Mode)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> • VIDEO IN (12 PIN CONNECTOR) : 100/0/100/0 Luminance 700mV CHROMINANCE ± 350mV • S1/AD-44P (H-10) : COMPONENT IN 	CH1 : CN12-8A/DA-33P (K-10)* ¹ TP39/DA-33P (J-4)* ²  $A = 0.70 \pm 0.02V$	●RV27/DA-33P (H-3)* ¹ (H-4)* ² TRIG : CH1

3-3. DIGITAL BLOCK ALIGNMENT

3-3-1. Settings for the Type of Connected Editors

The value of this switch is only read by the CPU after the power is turned on. Be sure to turn the power off and then on again after setting this switch.

Adjustment points: Switch S2 on the SY-146P board.

S2 is set to RM-450, BVE-600, BVE-900 or BVS-3000 SERIES. Refer to the following (1) thru. (4) for each mode.

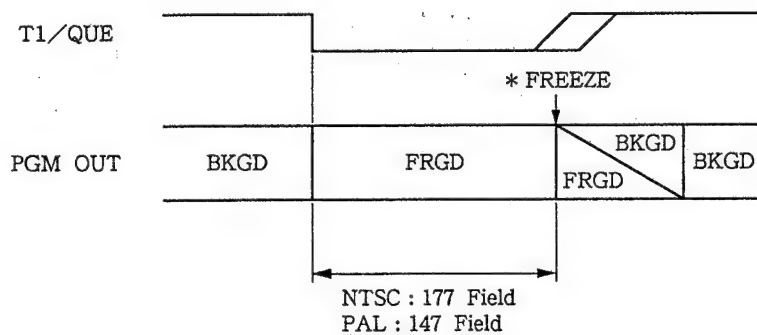
Factory Setting: "BVE-600"

(1) RM-450 (or RM-440) Mode

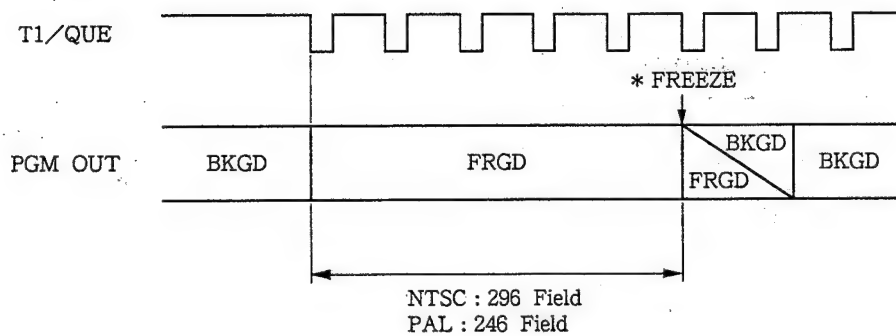
The CPU automatically distinguishes between the RM-450 and the RM-440 through the difference in their T1 signal waveforms. The control from the editor is through the T1/QUE signal. Operation timings are as follows.

[Operation Timing]

(i) RM-450



(ii) RM-440



- Freezes regardless of the position of the FREEZE switch.
- See "3-3-2. Effect Start Point Adjustment For RM-450 and RM-440" for the factory setting and adjustment.

(2) BVE-600 Mode

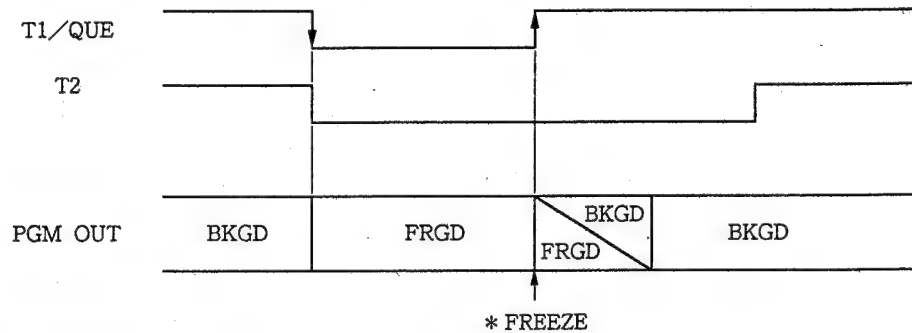
The control from the editor is through the T1/QUE and the T2 signals.

A-roll/AB-roll selection depends on the FREEZE switch setting.

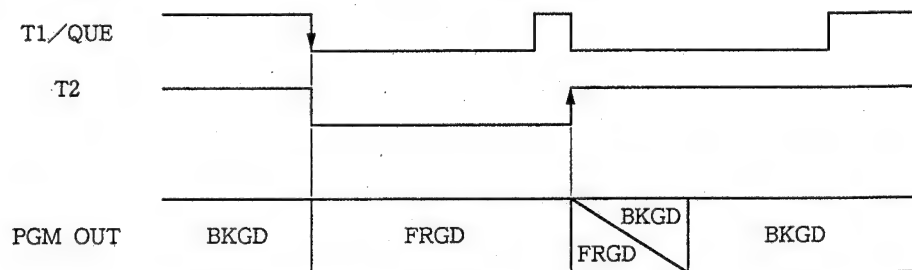
Operation timings are as follows.

[Operation Timing]

(i) A-roll (FREEZE SWITCH on the Console Unit : IN)



(ii) AB-roll (FREEZE SWITCH on the Console Unit : OUT)



(3) BVE-900 Mode

The control from the editor is through the D-SUB (9 pin).

The T1/QUE and the T2 signals are not accepted.

(4) BVS-3000 SERIES Mode

The control from the editor is through the D-SUB (9 pin).

The T1/QUE and the T2 signals are not accepted.

Being set to the other than the BVS-3000 SERIES mode, one of the effects number 1900 through 1954 is excuted, the cross point is switched over in the middle of the transition. When the unit is set to the BVS-3000 SERIES mode, switching over of the cross point is performed by the BVS-3000 SERIES side. DME-450P does not switch over the cross point.

3-3-2. Effect Start Point Adjustment for RM-450 and RM-440

(1) Fine Adjustment Using the Rotary Switch

If any error occurs in the FREEZE POINT or EFFECT START POINT against the IN POINT when editing with the RM-450 or RM-440, the time between the trailing edge of the T1/QUE signal and the beginning of a freeze or effect can be fine adjusted using this switch.

If the FREEZE POINT is delayed more than the IN POINT set with the RM-450 or RM-440 the video signal will be oscillated. Then adjust the timing to make freeze point earlier.

Adjustment Points : Switch S1 on the SY-146P board (16 position rotary switch)

Factory Setting : 0

Position of the Rotary Switch	TIME	
	RM-450	RM-440
7	"0" Position - 7 Field	"0" Position - 7 Field
6	"0" Position - 6 Field	"0" Position - 6 Field
5	"0" Position - 5 Field	"0" Position - 5 Field
4	"0" Position - 4 Field	"0" Position - 4 Field
3	"0" Position - 3 Field	"0" Position - 3 Field
2	"0" Position - 2 Field	"0" Position - 2 Field
1	"0" Position - 1 Field	"0" Position - 1 Field
0	NTSC : 177 Field (2.95sec) PAL : 147 Field (2.94sec)	NTSC : 296 Field (4.93sec) PAL : 246 Field (4.92sec)
F	"0" Position + 1 Field	"0" Position + 1 Field
E	"0" Position + 2 Field	"0" Position + 2 Field
D	"0" Position + 3 Field	"0" Position + 3 Field
C	"0" Position + 4 Field	"0" Position + 4 Field
B	"0" Position + 5 Field	"0" Position + 5 Field
A	"0" Position + 6 Field	"0" Position + 6 Field
9	"0" Position + 7 Field	"0" Position + 7 Field
8	"0" Position + 8 Field	"0" Position + 8 Field

See "(2) Adjustments Using the Console Unit".

(2) Adjustment Using the Console Unit

The "0 position setting" mentioned in (1) can be changed. When an optimal timing is not obtained after performing "(1) Fine Adjustment Using the Rotary Switch", this adjustment is available. The optimal timing value also depends a little on the VTR being connected. Be sure to align the timing when the RM-450 (or RM-440) is used with settings other than those shown in (1).

Adjustment Point: Key in from the console unit.

Adjustment Procedure:

- (i) Press the "TAKE" key while pressing the "1" and "3" BKGD select keys on the console.

↓

The version number is displayed in the effect number display area on the console unit.

↓

The video phase is displayed in the effect number display area on the console.

- (ii) Press the "TAKE" key.

↓

The border position is displayed.

- (iii) Press the "TAKE" key.

↓

The RM-450 timing is displayed as shown below.

C XXX

0 ≤ XXX ≤ 999

A three digit number representing edge is displayed as a field number.

Factory Setting:

NTSC: 177

PAL: 147

- (iv) Set the field number to the required value by pressing the "UP" key or the "DOWN" key.

- (v) Press the "TAKE" key.

↓

The value set in the step (iv) will be stored in memory and the RM-440 timing is displayed as follows.

E YYY

0 ≤ YYY ≤ 999

Factory Setting:

NTSC: 296

PAL: 246

- (vi) Set the field number to the desired value by pressing the "UP" key or the "DOWN" key.

- (vii) Press the "TAKE" key.

↓

The value set in the step (vi) is stored in memory and the unit will return to normal operation mode.

(3) Mode Setting on the RM-450 and RM-440 side

The followings are the recommended settings for the RM-450 (or RM-440). When the RM-450 (or RM-440) is used with the settings other than those shown below, refer to the "(2) Adjustment Using the Console Unit".

- (i) RM-450

Pre-roll selector: 5 or 7 seconds

QUE OUT timing: 3 seconds

- (ii) RM-440

Pre-roll time: S (5 seconds)

3-3-3. Video Phase Adjustment

Adjustment Point : Key in from the console unit.

Adjustment Procedure :

- (i) Press the "TAKE" key while pressing the "1" and "3" BKGD select keys on the console unit.

↓

Version number is displayed.

↓

Video phase is displayed.

C5 4
└─ 0~9

The value increases one by one, the timing of the read-out the picture in the memory is delayed by every 140 msec steps.

The foreground picture on the monitor moves to the right.

- (ii) Adjust the video phase using the "UP" and "DOWN" keys so that the left/right directional phase difference between the background and the foreground becomes as small as possible.

Factory setting :

NTSC : 4

PAL : 6

- (iii) Press the "TAKE" key.

↓

Border position is displayed.

- (iv) Press the "TAKE" key.

↓

RM-450 IN POINT position is displayed.

- (v) Press the "TAKE" key.

↓

RM-440 IN POINT position is displayed.

- (vi) Press the "TAKE" key.

↓

The unit returns to normal operation mode.

3-3-4. Boder Position Adjustment

When the blanking is visible on the foreground effect picture within the border, this adjustment is useful.

Adjustment Point : Key in from the console unit.

Adjustment Procedure :

- (i) Press the "TAKE" key while pressing the "1" and "3" of BKGD select keys on the console unit.

↓

Version number is displayed.

↓

Video phase is displayed.

- (ii) Press the "TAKE" key.

↓

Border position is displayed.

C6 0
└─ 0~9

The value increases, the border moves to inside of the picture. (by 140 msec)

(iii) When the blanking is visible on the foreground effect picture within the border, adjust the border value. Move the border to inside and mask any blanking using the "UP" and "DOWN" keys.

(iv) Press the "TAKE" key.

↓

RM-450 IN POINT is displayed.

(v) Press the "TAKE" key.

↓

RM-440 IN POINT is displayed.

(vi) Press the "TAKE" key.

↓

The unit returns to normal operation mode.

SECTION 4

SELF DIAGNOSIS

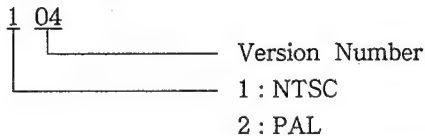
4-1. SYSTEM CONTROL

4-1-1. Program Version Check

For : ROMs IC22 and IC23 on the SY-146P board

Procedure : After turning the power on, press the "TAKE" key while pressing the "1" and "3" of BKGD select keys.

Check : The version number is displayed in the effect number display area when the "TAKE" key is pressed in the step above.



Restoration : Turn the power off to restore the system.

4-1-2. Hardware Check

For : RAMs IC20 and IC21 on the SY-146P board

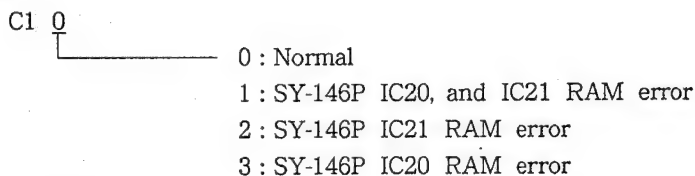
Procedure : After turning the power on, press the "TAKE" key while pressing the "1" and "3" of FRGD select keys.

Check :

(1) The unit will enter the console LED check routine. "0000", "1111", "222", "333", "444", "555", "666", "777", "888" and "999" are displayed in the effect number display area in order. Then every LED key will light in order shown in the figure. (Fig. 1)

(The LED light data is sent to the console unit from the system control board, SY-146P.)

(2) The unit will enter the read RAM check routine. RAM check status is displayed in the effect number display area.



Restoration : Turn the power off to restore the system.

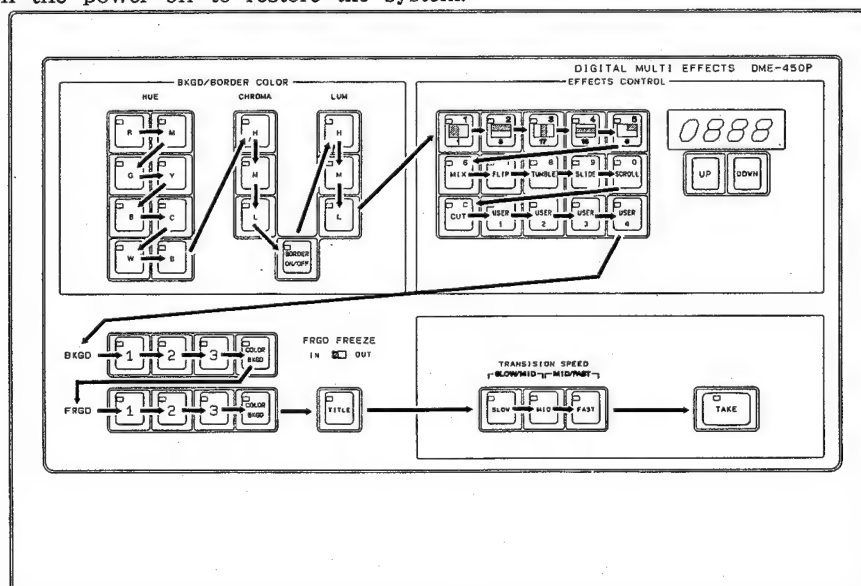


Fig. 1

4-1-3. Effects Check

(1) All Effects Check

Procedure : Press the "TAKE" key while pressing one of the EFFECTS select keys "USER1" thru. "USER3".

Check : The effects are automatically executed one at a time beginning with the effect selected. However, any of the effect numbers that are not allotted will be skipped.

Restoration : To restore the system, press any key on the console unit for a few seconds.

(2) Same Effect Check

Procedure : Press the "TAKE" key while pressing "USER4" of the EFFECTS select keys.

Check : The effect selected as "USER4" is automatically executed, repeatedly.

Restoration : To restore the system, press any key on the console for a few seconds.

4-2. CONSOLE UNIT CHECK

4-2-1. LED Check

Procedure : Turn the power on while pressing the "TAKE" key.

Check :

(1) "0000", "1111", "222", "333", "444", "555", "666", "777", "888" and "999" are displayed in the effect number display area in order. Then every LED keys will light in order shown in the figure. (Fig. 1)

(The LED light data is produced by the internal CPU on the KY-163 board in the console unit.)

Restoration : Turn the power off to restore the system.

4-2-2. Program Version Check

For : IC9 on the KY-163 board

Procedure : Turn the power on while pressing the "TUMBLE" key.

Check : The program version number is displayed.

C200

_____ Version Number

Restoration : Turn the power off to restore the system.

4-2-3. Hardware Check

(1) LED Check

Procedure : Before turning the power off in 4-2-2 above, press the "TAKE" key.

Check : "0000", "1111", "222", "333", "444", "555", "666", "777", "888" and "999" are displayed in the effect number display area in order.

(2) RAM Check

For : RAM IC10 on the KY-163 board

Procedure : Press the "TAKE" key before turning the power off in the above step (1).

Check : The RAM check status is displayed in the effect number display area.

C2 0

_____ 0 : Normal

1 : RAM error (IC10 of KY-163)

(3) ROM Check

For : ROM IC9 on the KY-163 board

Procedure : Press the "TAKE" key before turning the power off in the above step (2).

Check : The ROM check status is displayed.

C2 0
 └─ 0 : Normal
 1 : RAM error (IC9 of KY-163)

(4) Transmission Check

This mode is only for the factory's use.

Procedure : Press the "TAKE" key before turning the power off in the above step (3).

Check : The following status shown below appears in the effect number display area.

C4 1

(5) Key Switches Check

Procedure : Press the "TAKE" key before turning the power off in the above step (4).

Check : Press the keys in order from left to right, shown in the figure. (Fig.1)

Check that the LED corresponding to the pressed key lights.

(When a key is pressed in the wrong order, the buzzer sounds. Be sure to press the keys in order shown in the figure.)

(6) Freeze Switch Check

Check : The displays shown below appear in the effect number display area.

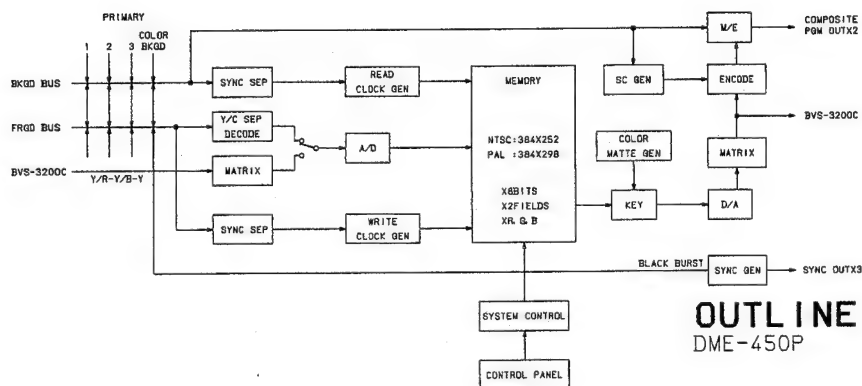
FREEZE IN : C6U

FREEZE OUT : C6 U

Restoration : Press the "TAKE" key.

SECTION 5 BLOCK DIAGRAMS

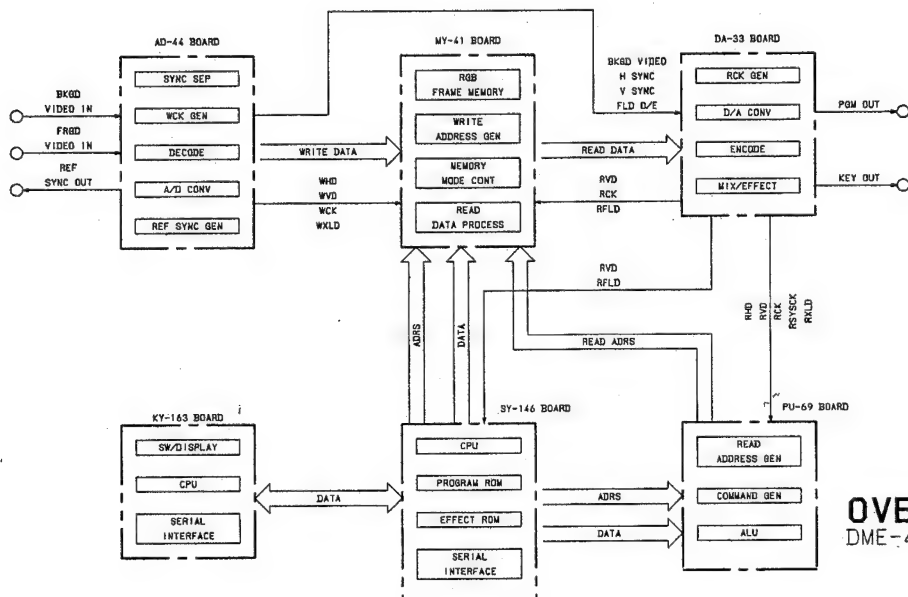
OUTLINE



OUTLINE
DME-450P

OVERALL

OVERALL

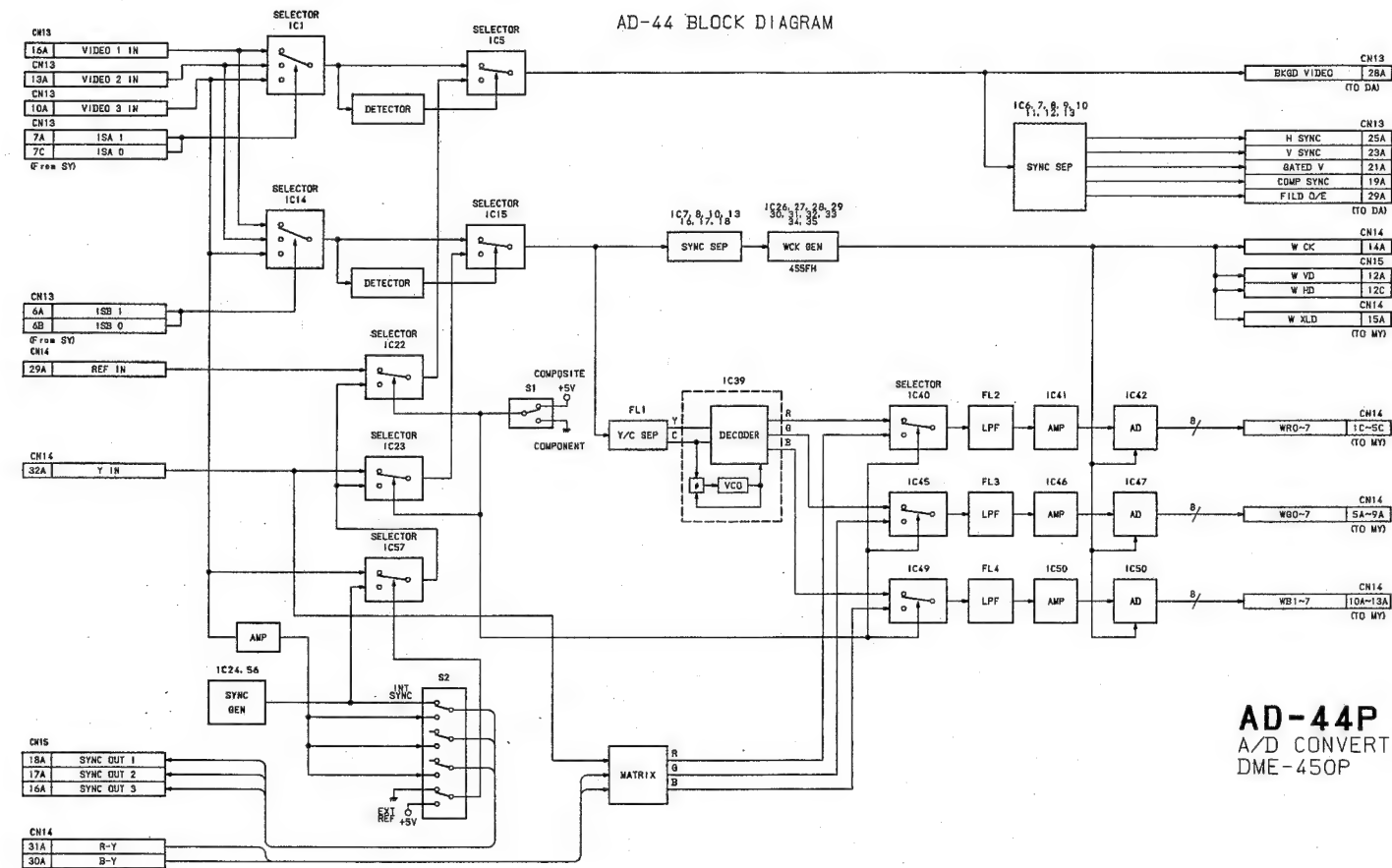


OVERALL
DME-450P

A/D CONVERTER

A/D CONVERTER

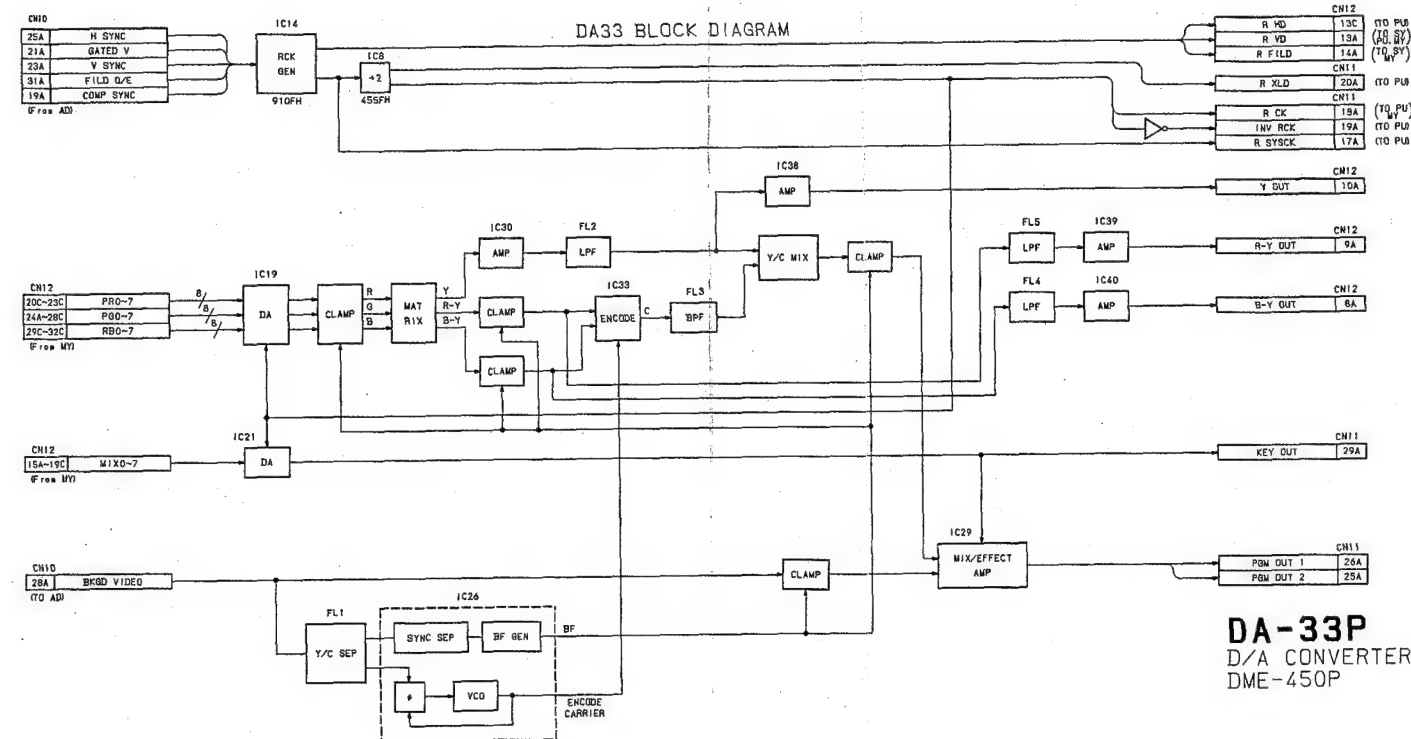
A/D CONVERTER



D/A CONVERTER

D/A CONVERTER

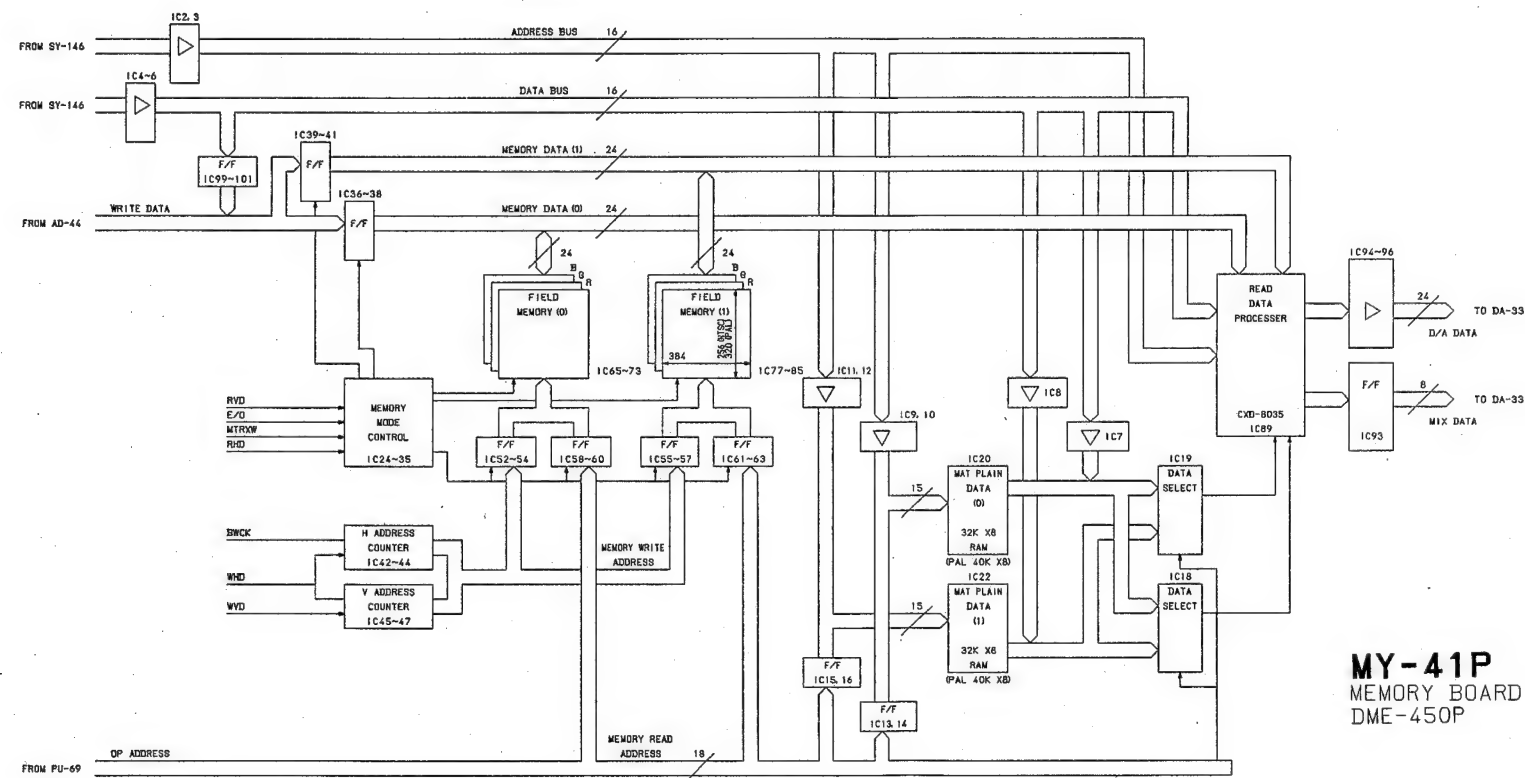
D/A CONVERTER



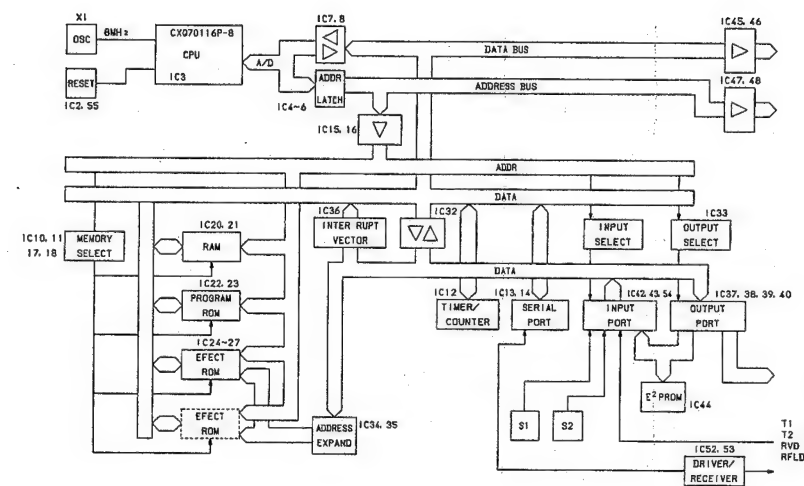
MEMORY BOARD

MEMORY BOARD

MEMORY BOARD

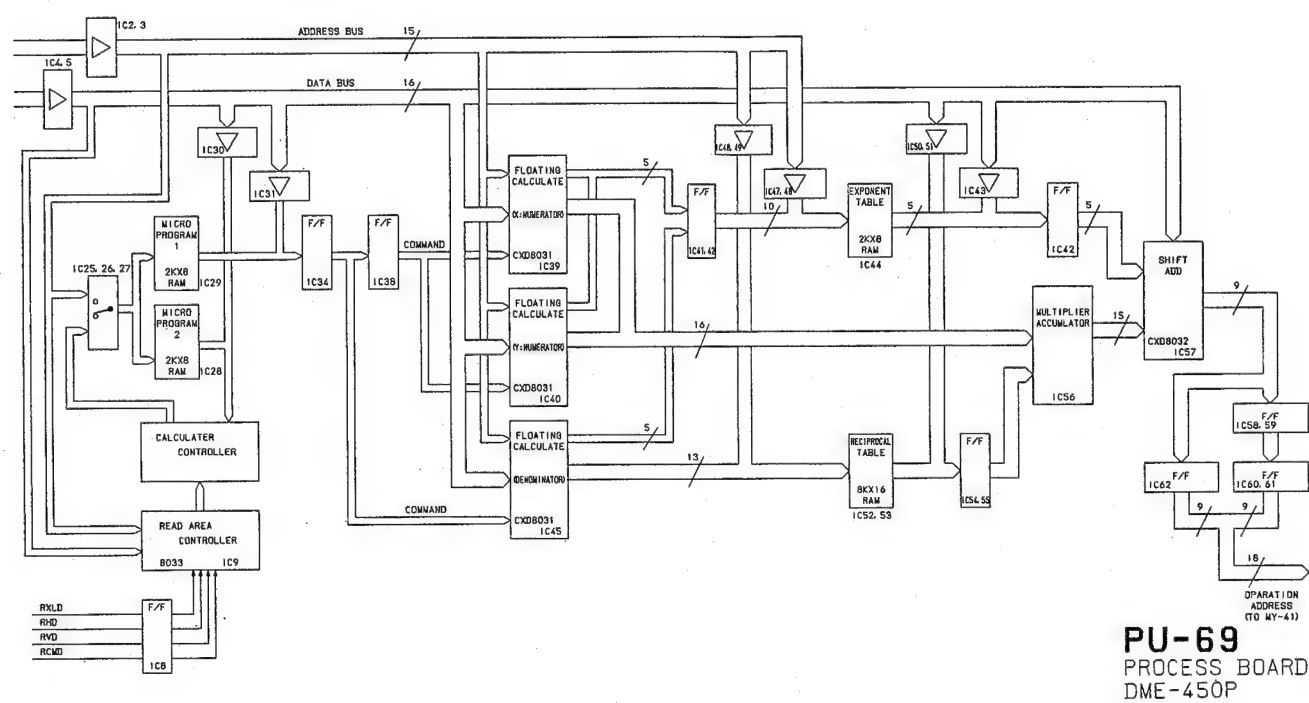


SYSTEM CONTROL BOARD



SY-146P
SYSTEM CONTROL BOARD
DME-450P

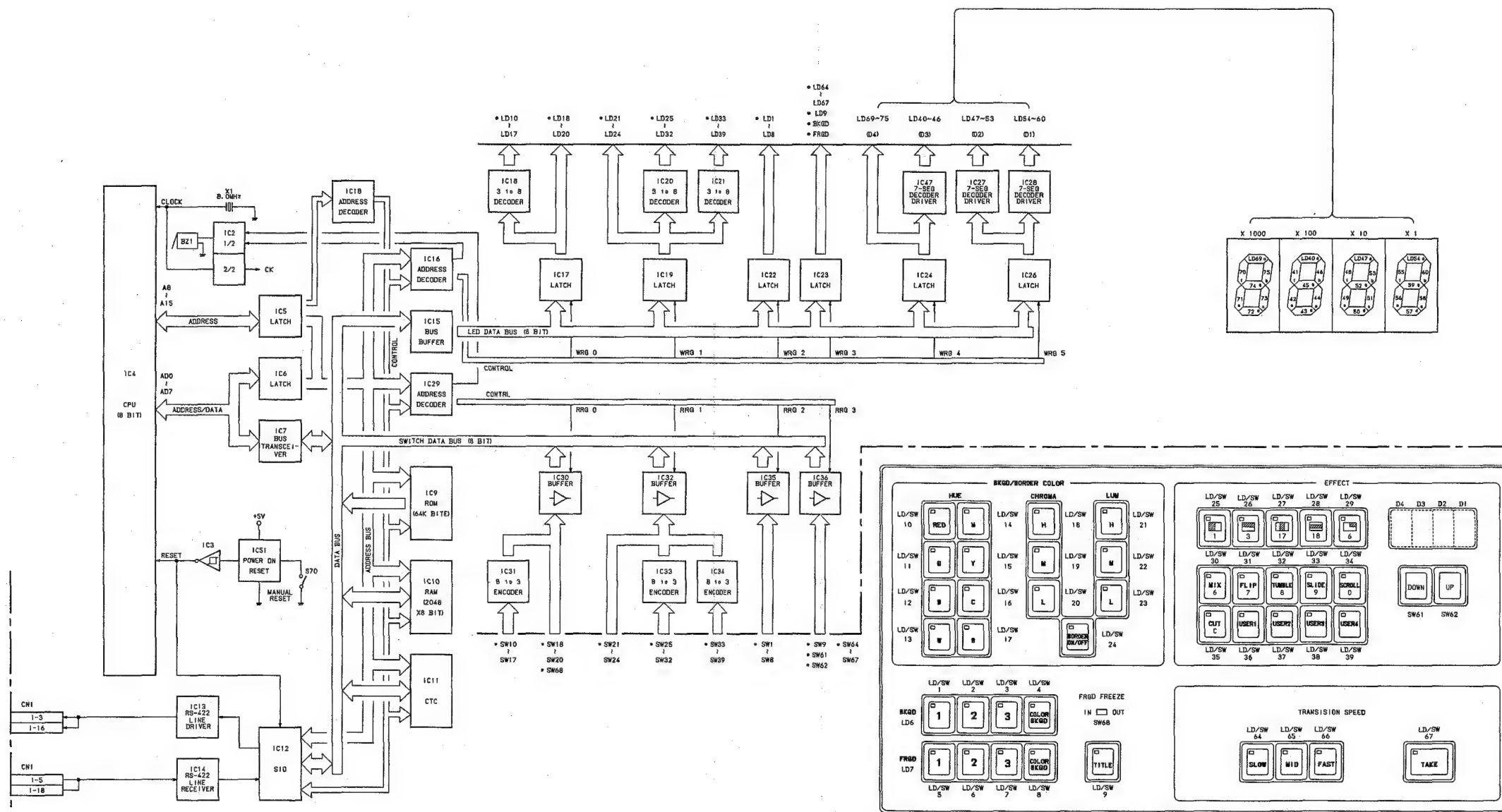
PROCESS BOARD



FUNCTION KEYBOARD

FUNCTION KEYBOARD

FUNCTION KEYBOARD



KY-163
FUNCTION KEYBOARD
DME-450P

SECTION 6

SEMICONDUCTOR ELECTRODES

ここに記載されているIC, トランジスタ, ダイオードは, それぞれの機能を等価的に表わしたものです。したがって互換性を表わすものではありません。(互換性のない型名が併記されている事もあります。) 部品の交換をする時は, 部品価格表を参照してください。

ICs, transistors and diodes whoses functions are equivalent are described here. Therefore, incompatible device nemes may be described together. For parts replacement, refer to the Spare Parts section in this mamual.

IC	PAGE	IC	PAGE	IC	PAGE
74F151APC	6-3	SN74ALS04BN	6-16	SN74LS32NS	6-17
74F378PC	6-3	SN74ALS04BNS	6-16	SN74LS348N	6-21
		SN74ALS08N	6-16	SN74LS373N	6-21
AM26LS31PC	6-3	SN74ALS08NS	6-16	SN74LS374N	6-17
AM26LS32PC	6-3	SN74ALS10AN	6-16	SN74LS374NS	6-17
		SN74ALS109ANS	6-16	SN74LS375N	6-21
BX1054	6-3	SN74ALS174N	6-16	SN74LS377N	6-22
BX1339A	6-3	SN74ALS244B1NS	6-17	SN74LS399NS	6-22
BX1356	6-3	SN74ALS244BN	6-17	SN74LS74AN	6-22
		SN74ALS32N	6-17	SN74LS74ANS	6-22
CX20206	6-6	SN74ALS32NS	6-17		
CX22017	6-5	SN74ALS374N	6-17	TA7357AP	6-22
CX7930A	6-4	SN74HC00NS	6-17	TC74HC00F	6-17
CXA1096P	6-6	SN74HC04NS	6-17	TC74HC04F	6-17
CXA1106M	6-6	SN74HC08NS	6-17	TC74HC08F	6-17
CXD8031Q	6-7	SN74HC138NS	6-17	TC74HC123F	6-22
CXD8032Q	6-7	SN74HC164NS	6-18	TC74HC373F	6-22
CXD8033Q	6-8	SN74HC244NS	6-18	TL082CPS	6-22
CXD8035Q	6-8	SN74HC245NS	6-18	TL431CLPB	6-23
CXK1009P	6-9	SN74HC373NS	6-18	TL431CLP	6-23
CXK5814P-35	6-10	SN74HC374NS	6-18		
CXK5814P-35L	6-10	SN74LS00N	6-16	UPC319G2	6-23
CXK5816M-12L	6-10	SN74LS02N	6-16	UPD43256C-10L	6-23
CKX5864BM-70L	6-11	SN74LS04N	6-16	UPD43256G-10L	6-23
CXQ71051P	6-11	SN74LS04NS	6-16		
CXQ71054P	6-12	SN74LS05NS	6-18	V7020	6-24
CXQ70108P-8	6-12	SN74LS06NS	6-18		
		SN74LS07NS	6-19	WS59510-50J	6-25
HN27C64G-20	6-13	SN74LS08N	6-16		
HN27C301G-20	6-13	SN74LS08NS	6-16		
		SN74LS10N	6-16		
LM1881N	6-14	SN74LS107AN	6-19		
		SN74LS109AN	6-16		
M5109P	6-14	SN74LS11N	6-19		
MB4002PF	6-14	SN74LS123NS	6-19		
MBM27C256AP-20	6-14	SN74LS138N	6-19		
		SN74LS139N	6-19		
NJM13700M	6-14	SN74LS153N	6-19		
NJM2217J	6-15	SN74LS157N	6-20		
NJM2233AM	6-15	SN74LS157NS	6-20		
NJM2334M	6-15	SN74LS161AN	6-20		
		SN74LS164N	6-20		
RC78 ?? FA	6-15	SN74LS174N	6-16		
RC79L ?? A	6-15	SN74LS175N	6-20		
		SN74LS221NS	6-20		
SI3052V	6-16	SN74LS244N	6-17		
SN74ALS00AN	6-16	SN74LS245N	6-21		
SN74ALS02N	6-16	SN74LS32N	6-17		

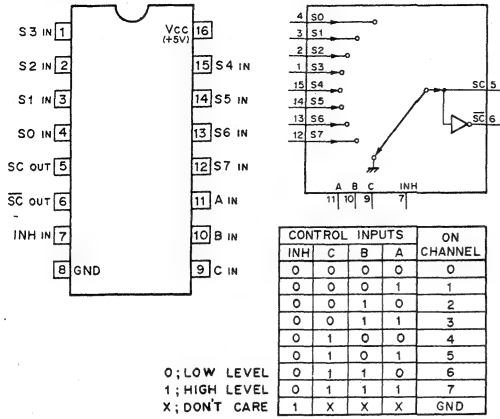
DIODE	PAGE	TRANSISTOR	PAGE
ISS119	6-26	2SA1048	6-26
ISS99	6-26	2SA1115	6-26
GL-9D03D	6-26	2SA1175	6-26
LT9230N2	6-26	2SA995	6-26
RD ?? ESB	6-26	2SC1583	6-26
TLY123	6-26	2SC2026	6-26
		2SC2570A	6-26
		2SC2785	6-26
		2SC2901	6-26
		2SK152	6-26

等価回路はICメーカーのData Bookに従いました。

The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

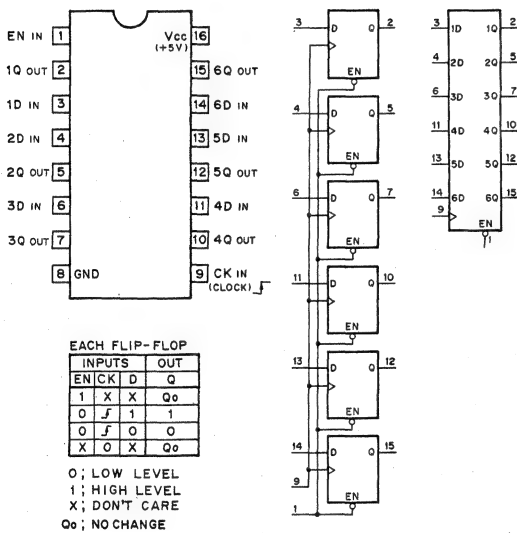
74F151APC (FSC)

TTL 8-LINE-TO-1-LINE DATA SELECTOR/MULTIPLEXER
— TOP VIEW —

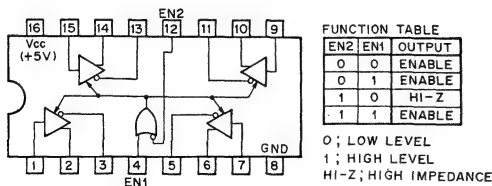


74F378PC (FSC)

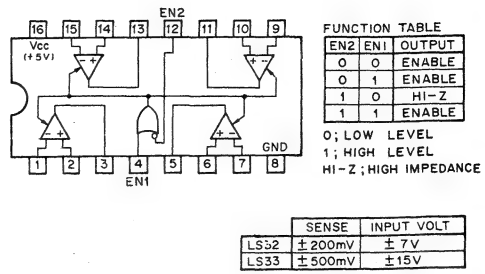
TTL D-TYPE FLIP-FLOP WITH ENABLE
— TOP VIEW —



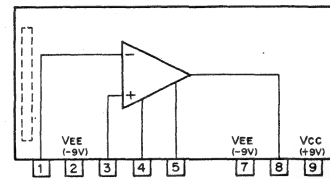
AM26LS31PC (ADVANCED MICRO DEVICE)
HIGH SPEED DIFFERENTIAL LINE DRIVER
— TOP VIEW —



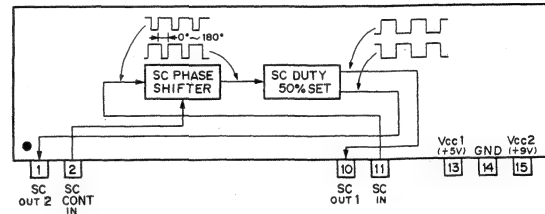
AM26LS32PC (ADVANCED MICRO DEVICES)
HIGH SPEED DIFFERENTIAL LINE RECEIVER
— TOP VIEW —



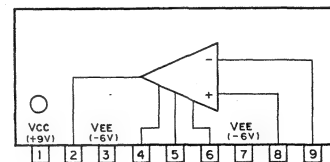
BX1054 (SONY)
VIDEO AMPLIFIER
— REAR VIEW —



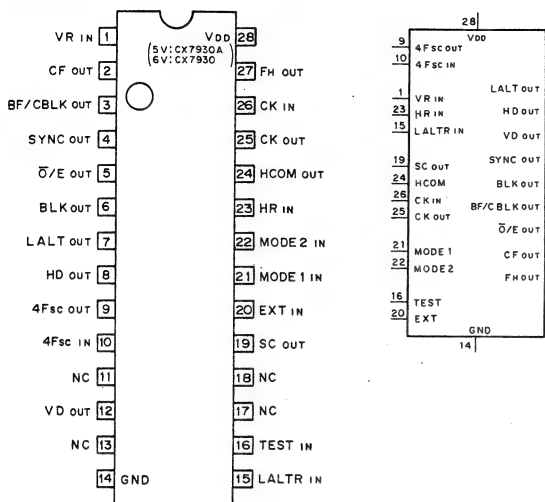
BX1339A (SONY)
SC PHASE SHIFTER
— REAR VIEW —



BX1356 (SONY)
VIDEO OUTPUT AMPLIFIER
— PRINTED SIDE —



CX7930A (SONY) FLAT PACKAGE
C-MOS SYNC GENERATOR (NTSC, PAL-M, PAL, SECAM)
— TOP VIEW —



$\overline{O/E}$: ODD/EVEN FIELD
 CF : COLOR FRAME PULSE
 HCOM : H COMPARATOR

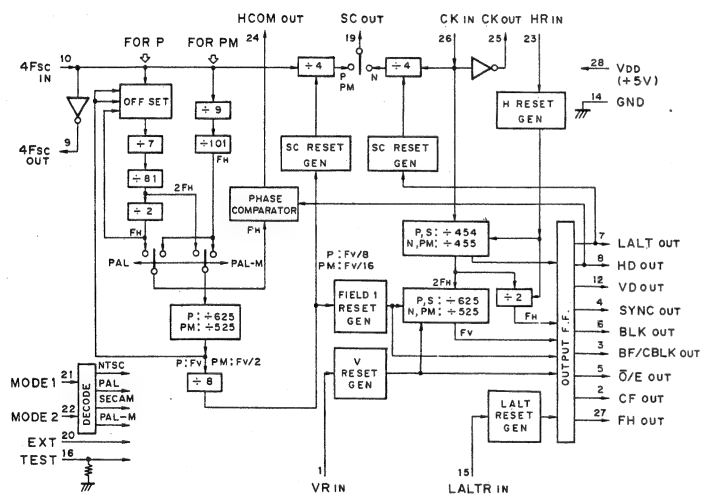
SYSTEM	4Fsc	CLOCK
NTSC	910 Fh	910 Fh
PAL	1135 Fh+2Fv	908 Fh
PALM	909 Fh	910 Fh
SECAM	————	908 Fh

INPUTS		SYSTEM
MODE 1	MODE 2	
0	0	NTSC
0	1	SECAM
1	0	PALM
1	1	PAL

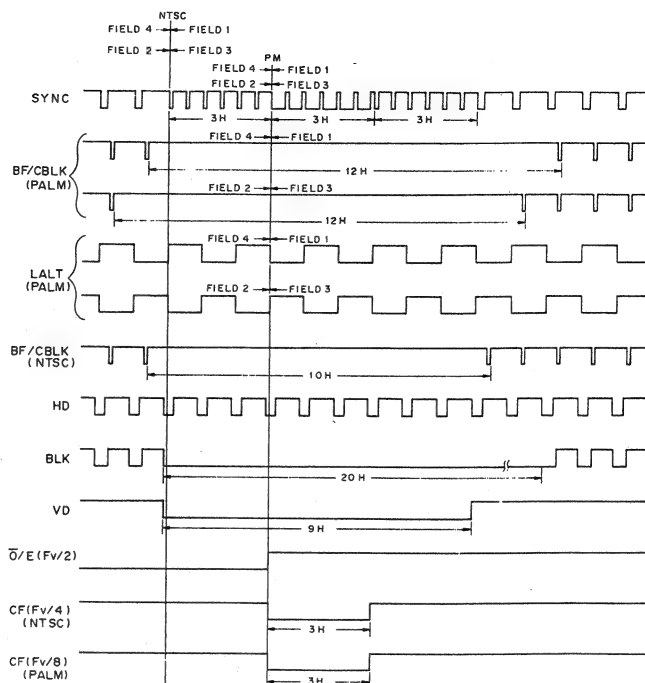
0 ; LOW LEVEL (GND)
1 ; HIGH LEVEL (V_{DD})

INPUTS		FUNCTION
EXT	TEST	
0	0	INTERNAL
0	1	INVALID
1	0	EXT
1	1	TEST

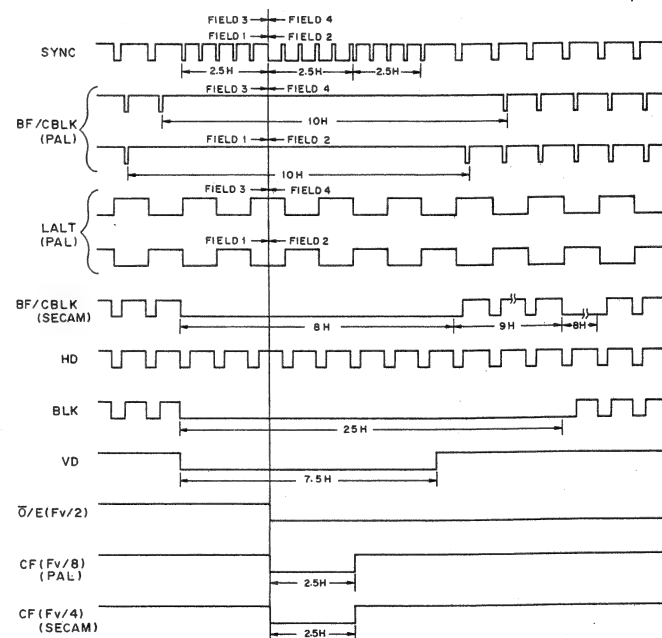
TEST "O": OPEN
(INTERNALLY)
(PULLED DOWN)



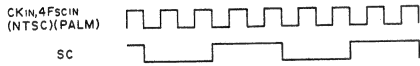
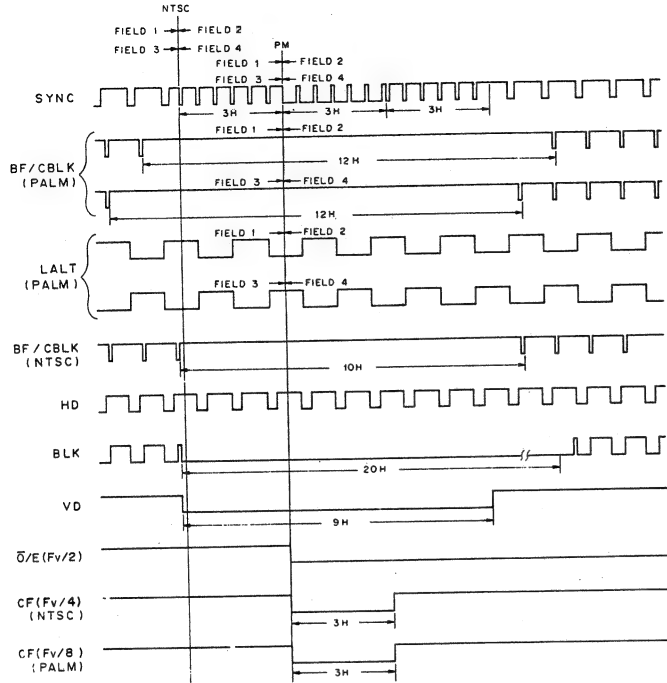
NTSC, PAL-M (FIELD 1,3)



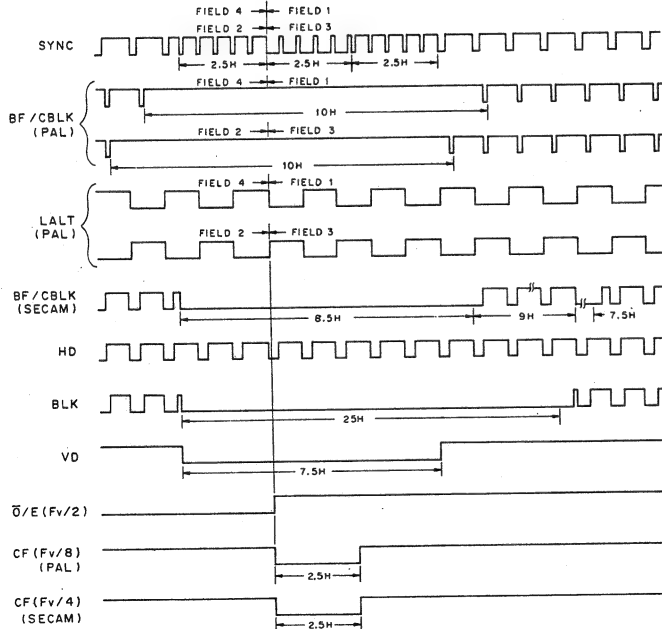
PAL, SECAM (FIELD 4,2)



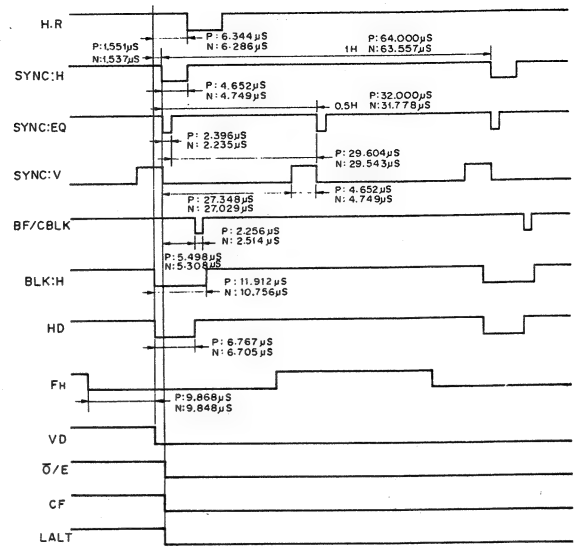
NTSC, PAL-M (FIELD 2, 4)



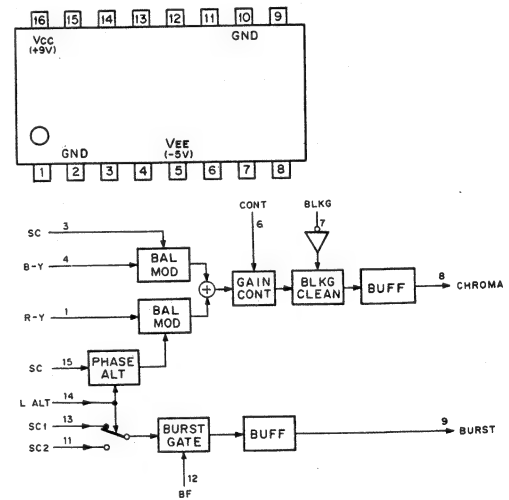
PAL, SECAM (FIELD 1, 3)



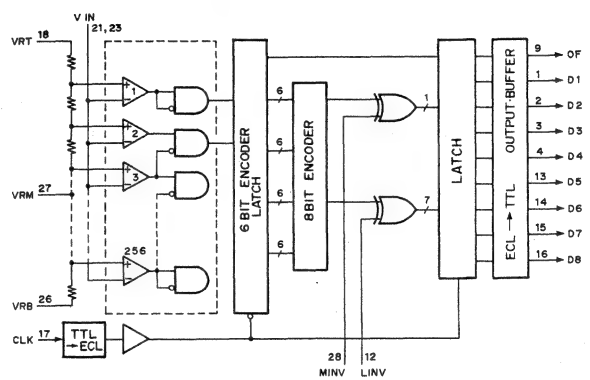
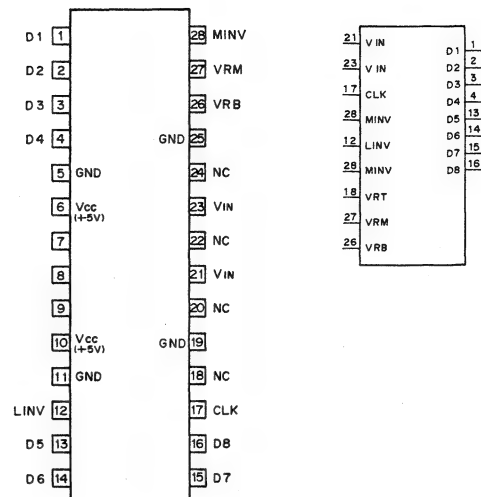
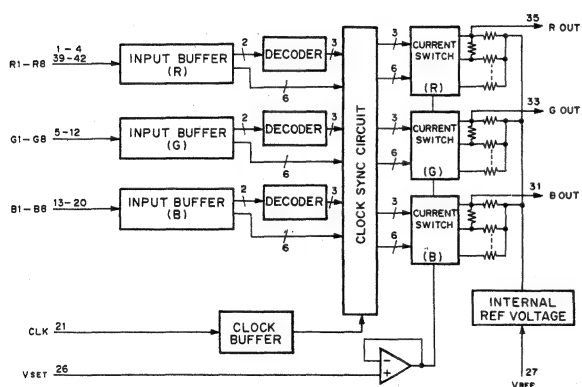
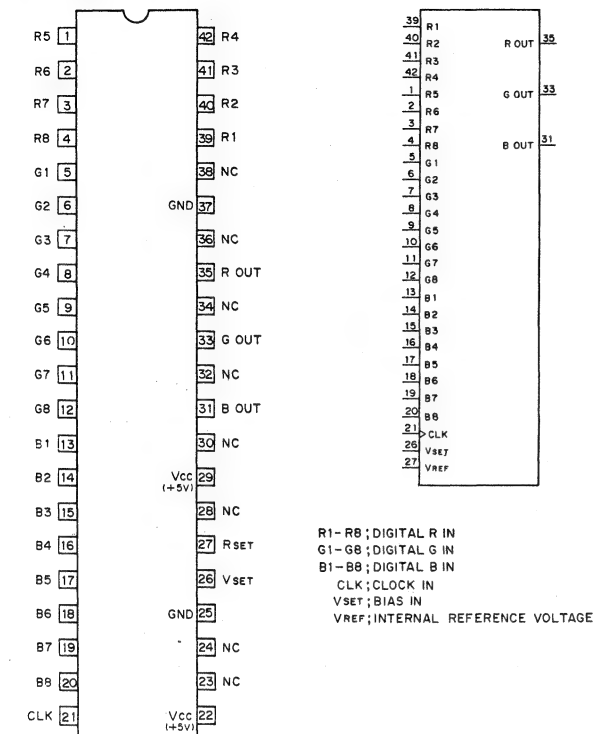
P: PAL, SECAM
N: NTSC, PALM



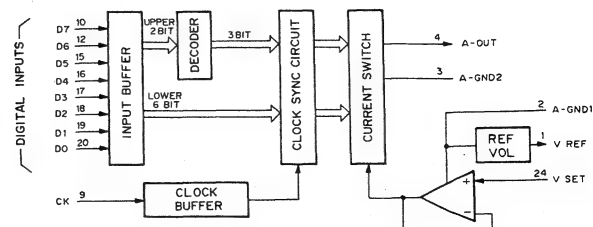
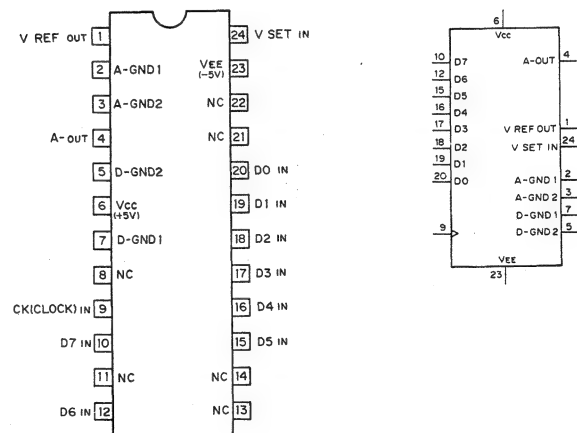
CX22017 (SONY)
VIDEO SIGNAL PROCESSOR
— TOP VIEW —



CXA1096P (SONY)
8-BIT A/D CONVERTER



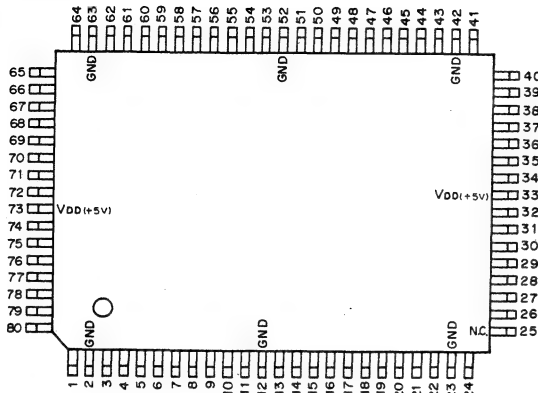
CXA1106M (SONY) FLAT PACKAGE
8-BIT D/A CONVERTER (TTL INPUT)
- TOP VIEW -



CXD8031Q (SONY) FLAT PACKAGE

C-MOS GATE ARRAY

- TOP VIEW -

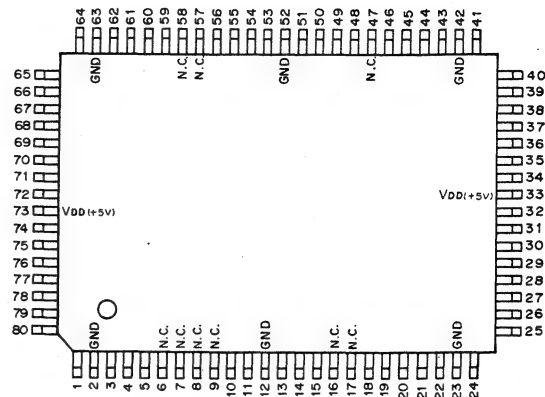


PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	O	Q2	21	O	Q11	41	O	Q18	61	I	OE
2	-	GND	22	O	Q12	42	-	GND	62	I	CLK
3	O	Q3	23	-	GND	43	O	Q19	63	-	GND
4	O	Q4	24	I	CLR	44	O	Q20	64	O	E2
5	I	D5	25	-	N.C.	45	I	D20	65	O	E3
6	I	D6	26	O	Q13	46	I	D21	66	O	E4
7	I	D7	27	O	Q14	47	I	D22	67	I	C4
8	I	D8	28	O	Q15	48	I	D23	68	I	C5
9	O	Q5	29	I	D13	49	O	Q21	69	I	CE
10	O	Q6	30	I	D14	50	O	Q22	70	I	A0
11	O	Q7	31	I	D15	51	O	Q23	71	I	A1
12	-	GND	32	I	DS1	52	-	GND	72	I	WE
13	O	Q8	33	-	VDD(+5V)	53	I	MODE	73	-	VDD(+5V)
14	O	Q9	34	I	DS2	54	I	TEST	74	I	DS0
15	I	D9	35	I	D16	55	I	C0	75	I	D0
16	I	D10	36	I	D17	56	O	E0	76	I	D1
17	I	D11	37	I	D18	57	I	C1	77	I	D2
18	I	D12	38	I	D19	58	I	C2	78	I	D3
19	I	D13	39	O	Q16	59	O	E1	79	O	Q0
20	O	Q10	40	O	Q17	60	I	C3	80	O	Q1

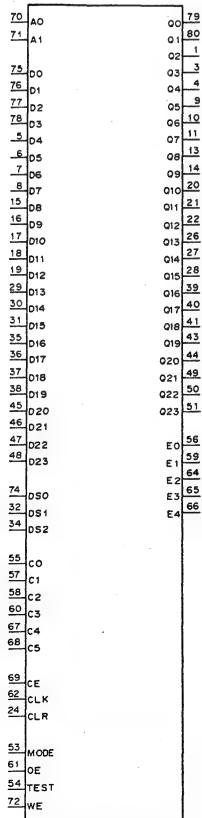
CXD8032Q (SONY) FLAT PACKAGE

C-MOS GATE ARRAY

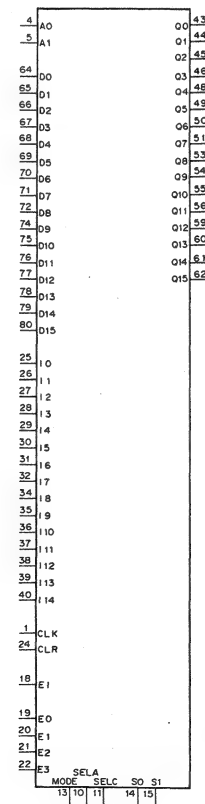
- TOP VIEW -



PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	I	CLK	21	I	E2	41	O	E0	61	O	Q14
2	-	GND	22	I	E3	42	-	GND	62	O	Q15
3	I	WE	23	-	GND	43	O	Q0	63	-	GND
4	I	A0	24	I	CLR	44	O	Q1	64	I	D0
5	I	A1	25	I	I0	45	O	Q2	65	I	D1
6	-	N.C.	26	I	I1	46	O	Q3	66	I	D2
7	-	N.C.	27	I	I2	47	-	N.C.	67	I	D3
8	-	N.C.	28	I	I3	48	O	Q4	68	I	D4
9	-	N.C.	29	I	I4	49	O	Q5	69	I	D5
10	I	SELA	30	I	I5	50	O	Q6	70	I	D6
11	I	SELC	31	I	I6	51	O	Q7	71	I	D7
12	-	GND	32	I	I7	52	-	GND	72	I	D8
13	I	MODE	33	-	VDD(+5V)	53	O	Q8	73	-	VDD(+5V)
14	I	S0	34	I	I8	54	O	Q9	74	I	D9
15	I	S1	35	I	I9	55	O	Q10	75	I	D10
16	-	N.C.	36	I	I10	56	O	Q11	76	I	D11
17	-	N.C.	37	I	I11	57	-	N.C.	77	I	D12
18	I	E1	38	I	I12	58	-	N.C.	78	I	D13
19	I	E0	39	I	I13	59	O	Q12	79	I	D14
20	I	E1	40	I	I14	60	O	Q13	80	I	D15

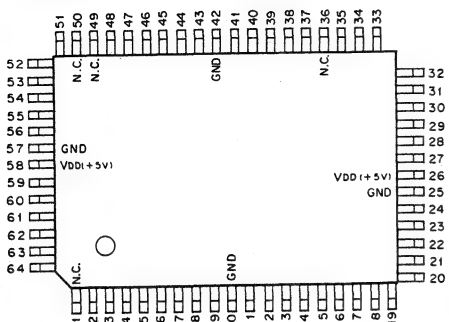


A0, 1 : ADDRESS
 CO - C5 : COMMAND
 CE : COMMAND ENABLE
 CLK : CLOCK
 CLR : CLEAR
 D0 - D23 : DATA INPUT
 DS0 - DS2 : DATA STROBE
 E0 - E4 : EXPONENT OUTPUT
 MODE : OUTPUT MODE
 OE : OUTPUT ENABLE
 Q0 - Q23 : DATA OUTPUT
 TEST : TEST PIN
 WE : WRITE ENABLE

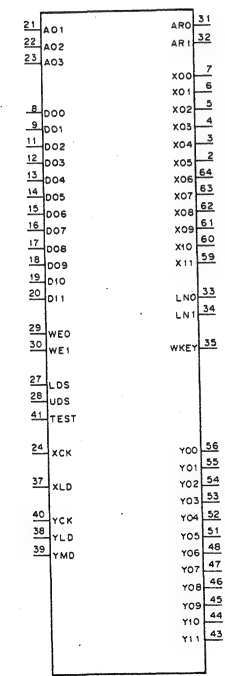


A0, 1 : ADDRESS 0, 1
 CLK : CLOCK
 CLR : CLEAR
 D0 - D15 : RESISTER DATA INPUT 0 - 15
 E1 : ERROR INPUT
 E0 - E3 : EXPONENT INPUT 0 - 3
 E0 : ERROR OUTPUT
 I0 - I14 : DATA INPUT 0 - 14
 MODE : INPUT MODE
 S0, 1 : SIGN INPUT 0, 1
 SELA : A RESISTOR SELECT
 SELC : C RESISTOR SELECT
 Q0 - Q15 : DATA OUTPUT 0 - 15

CXD8033Q (SONY) FLAT PACKAGE
C-MOS GATE ARRAY
- TOP VIEW -

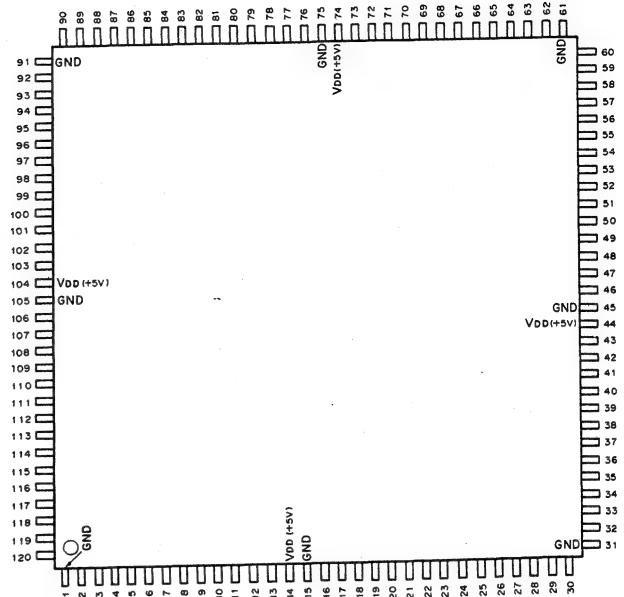


PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	-	N.C.	23	I	A03	45	O	Y09
2	O	X05	24	I	XCK	46	O	Y08
3	O	X04	25	-	GND	47	O	Y07
4	O	X03	26	-	VDD(+5V)	48	O	Y06
5	O	X02	27	I	LDS	49	-	N.C.
6	O	X01	28	I	UDS	50	-	N.C.
7	O	X00	29	I	WE0	51	O	Y05
8	I	D00	30	I	WE1	52	O	Y04
9	I	D01	31	O	AR0	53	O	Y03
10	-	GND	32	O	AR1	54	O	Y02
11	I	D02	33	O	LN0	55	O	Y01
12	I	D03	34	O	LN1	56	O	Y00
13	I	D04	35	O	WKEY	57	-	GND
14	I	D05	36	-	N.C.	58	-	VDD(+5V)
15	I	D06	37	I	XLD	59	O	X11
16	I	D07	38	I	YLD	60	O	X10
17	I	D08	39	I	YMD	61	O	X09
18	I	D09	40	I	YCK	62	O	X08
19	I	D10	41	I	TEST	63	O	X07
20	I	D11	42	-	GND	64	O	X06
21	I	A01	43	O	Y11			
22	I	A02	44	O	Y10			



A01 - A03 : ADDRESS 01 - 03
AR0, 1 : VALID AREA 0, 1
D00 - D11 : DATA INPUT 00 - 11
LDS : LOWER DATA STROBE
LN0, 1 : VALID LINE 0, 1
UDS : UPPER DATA STROBE
TEST : TEST PIN
WE0, 1 : WRITE ENABLE 0, 1
X00 - X11 : X CONVERTER OUTPUT
XCK : X CLOCK
WKEY : WIPE KEY
XLD : X LOAD
Y00 - Y11 : Y COUNTER OUTPUT 00 - 11
YCK : Y CLOCK
YLD : Y LOAD
YMD : Y MODE

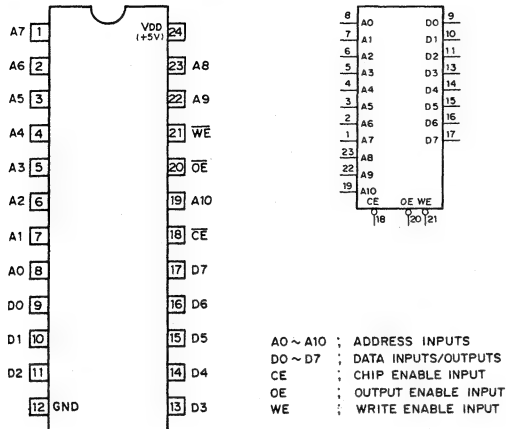
CXD8035Q (SONY) FLAT PACKAGE
C-MOS GATE ARRAY
- TOP VIEW -



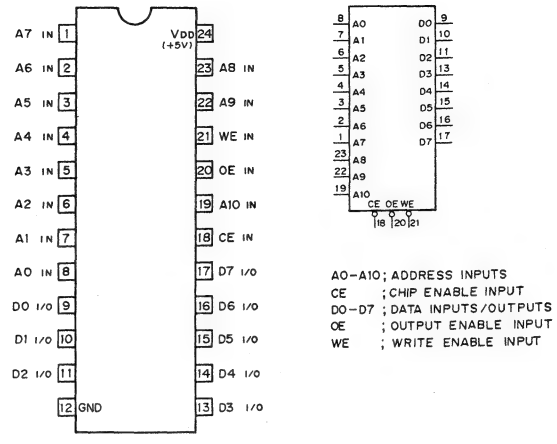
A01 - A03 : ADDRESS 01 - 03
BLK : BLANKING SIGNAL INPUT
CK : CLOCK
D00 - D15 : REGISTER DATA INPUT
FMO : INPUT PORT SELECT
KEY : KEY OUTPUT
M000 - M023 : # 0-PORT DATA INPUT 000 - 023
M100 - M123 : # 1-PORT DATA INPUT 100 - 123
MC0, MC1 : OUTPUT DATA SELECT 0, 1
MIX0 - MIX7 : MIX SIGNAL OUTPUT
RB0 - RB7 : B-PORT DATA OUTPUT 0 - 7
REGS : REGISTER DATA STROBE
RG0 - RG7 : G-PORT DATA OUTPUT 0 - 7
RR0 - RR7 : R-PORT DATA OUTPUT 0 - 7
VDT : VALID DATA
WIPE : WIPE SIGNAL INPUT

PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	-	GND	41	I	A01	81	O	RR1
2	I	M005	42	I	D15	82	I	VDT
3	I	M004	43	I	D14	83	I	FMO
4	I	M003	44	-	VDD(+5V)	84	I	BLK
5	I	M002	45	-	GND	85	O	RR2
6	I	M001	46	I	CK	86	O	RR3
7	I	M000	47	I	D13	87	O	RR4
8	I	M123	48	I	D12	88	O	RR5
9	I	M122	49	I	D11	89	O	RR6
10	I	M121	50	I	D10	90	O	RR7
11	I	M120	51	I	D09	91	-	GND
12	I	M119	52	I	D08	92	O	MIX0
13	I	M118	53	I	D07	93	O	MIX1
14	-	VDD(+5V)	54	I	D06	94	O	MIX2
15	-	GND	55	I	D05	95	O	MIX3
16	I	M117	56	I	D04	96	O	MIX4
17	I	M116	57	I	D03	97	O	MIX5
18	I	M115	58	I	D02	98	O	MIX6
19	I	M114	59	I	D01	99	O	MIX7
20	I	M113	60	I	D00	100	O	KEY
21	I	M112	61	-	GND	101	I	M023
22	I	M111	62	O	RB0	102	I	M022
23	I	M110	63	O	RB1	103	I	M021
24	I	M109	64	O	RB2	104	-	VDD(+5V)
25	I	M108	65	O	RB3	105	-	GND
26	I	M107	66	O	RB4	106	I	M020
27	I	M106	67	O	RB5	107	I	M019
28	I	M105	68	O	RB6	108	I	M018
29	I	M104	69	O	RB7	109	I	M017
30	I	M103	70	O	RG0	110	I	M016
31	-	GND	71	O	RG1	111	I	M015
32	I	M102	72	O	RG2	112	I	M014
33	I	M101	73	O	RG3	113	I	M013
34	I	M100	74	-	VDD(+5V)	114	I	M012
35	I	MC1	75	-	GND	115	I	M011
36	I	MC0	76	O	RG4	116	I	M010
37	I	WIPE	77	O	RG5	117	I	M009
38	I	REGS	78	O	RG6	118	I	M008
39	I	A03	79	O	RG7	119	I	M007
40	I	A02	80	O	RR0	120	I	M006

CXK5814P-35 (SONY) (ACCESS TIME = 35nS)
 CXK5814P-35L (SONY) (ACCESS TIME = 35nS)
 C-MOS 16K(2Kx8) STATIC RAM
 — TOP VIEW —



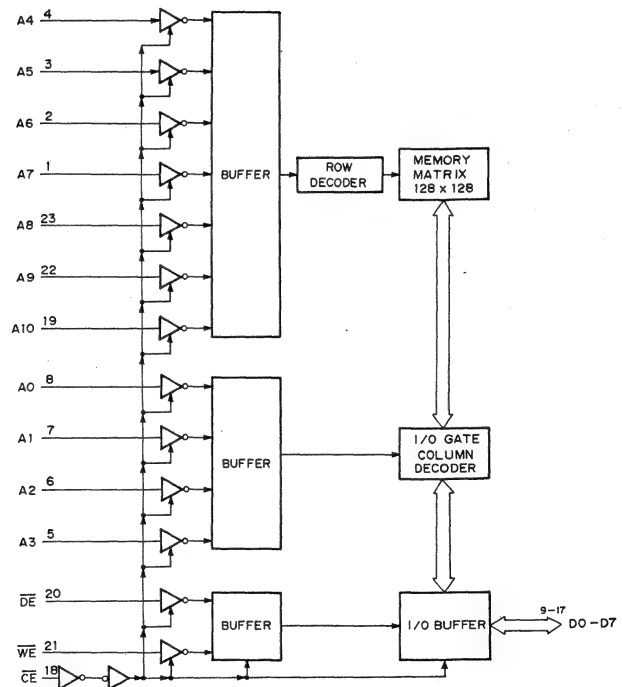
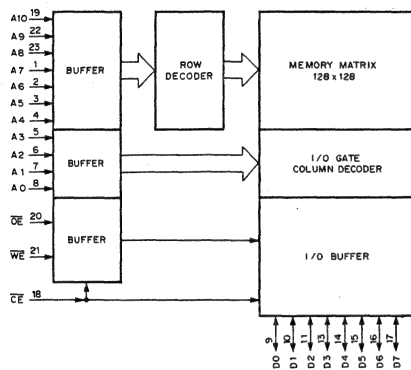
CXK5816M-12L (SONY) (ACCESS TIME 120nS)
 C-MOS 16K (2Kx8-BIT) STATIC RAM
 — TOP VIEW —



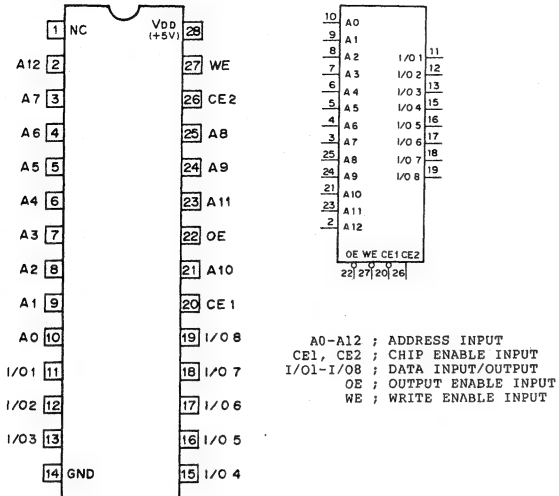
MODE SELECTION

CONTROL INPUTS			MODE
CE	DE	WE	
1	X	X	NO CHANGE
0	1	1	DISABLE OUTPUT
0	0	1	READ
0	1	0	WRITE

0: LOW LEVEL
 1: HIGH LEVEL
 X: DON'T CARE

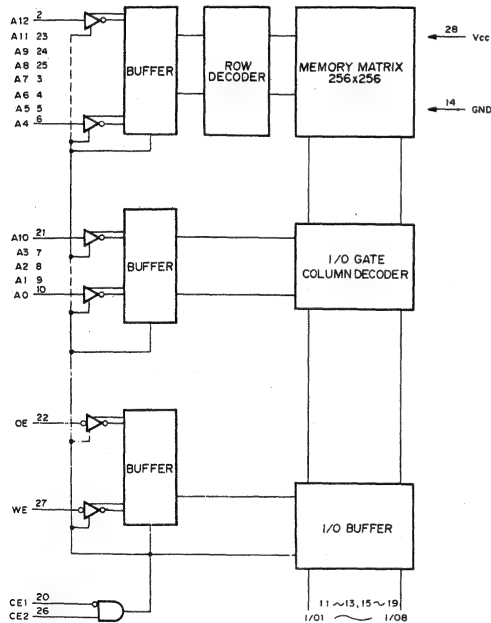
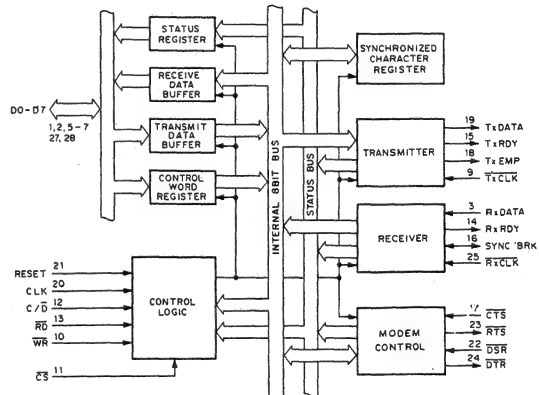
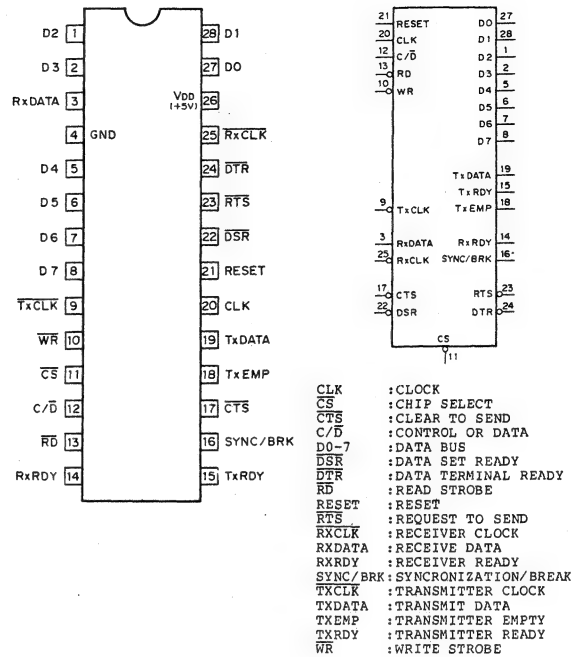


CXK58648M-70L (SONY) (ACCESS TIME = 70ns) FLAT PACKAGE

CMOS 8192 WORDx8 BIT STATIC RAM
- TOP VIEW -

CE1	CE2	OE	WE	MODE	I/O TERMINAL
1	X	X	X	NOT SELECT	HIGH IMPEDANCE
X	0	X	X	NOT SELECT	HIGH IMPEDANCE
0	1	1	1	OUTPUT DISABLE	HIGH IMPEDANCE
0	1	0	1	READ	OUTPUT DATA
0	1	X	0	WRITE	INPUT DATA

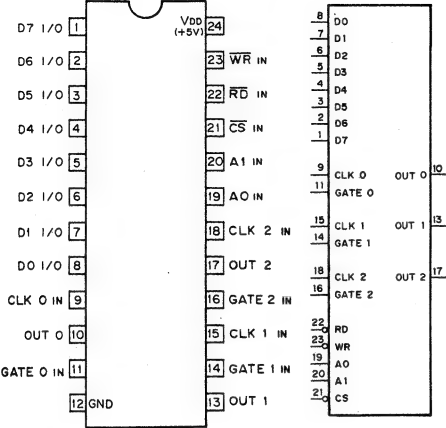
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

CXQ71051P (SONY)
C-MOS SERIAL CONTROL UNIT
- TOP VIEW -

CS	RD	WR	C/D	MODE	FUNCTION
0	0	1	0	RECEIVE DATA BUFFER--> DATA BUS	READ RECEIVE DATA
0	0	1	1	STATUS REGISTER--> DATA BUS	READ STATUS
0	1	0	0	DATA BUS--> TRANSMIT DATA BUFFER	WRITE RECEIVE DATA
0	1	0	1	DATA BUS--> CONTROL WORD REGISTER	WRITE CONTROL WORD
0	1	1	X	DATA BUS:HIGH IMPEDANCE	
1	X	X	X	DATA BUS:HIGH IMPEDANCE	

1; HIGH LEVEL
0; LOW LEVEL
X; DON'T CARE

CXQ71054P (SONY)
C-MOS PROGRAMMABLE TIMER COUNTER
- TOP VIEW -

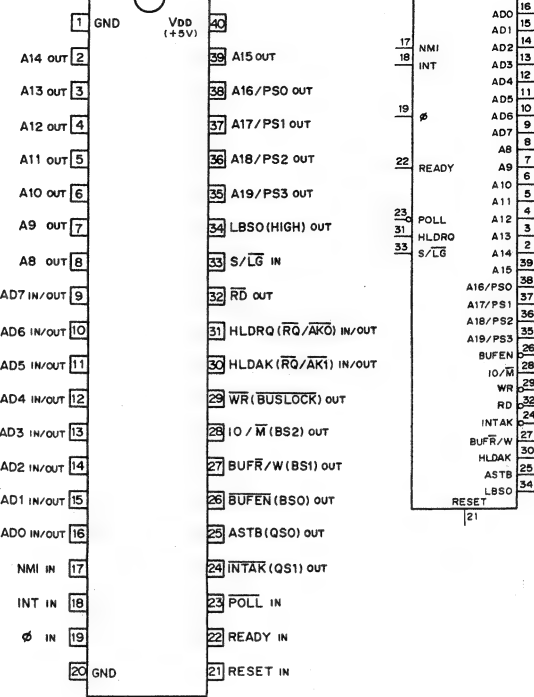


FUNCTION TABLE				
CS	RD	WR	A1	AO
0	1	0	0	0
0	1	0	0	1
0	1	0	1	0
0	1	0	1	1
0	0	1	0	0
0	0	1	0	1
0	0	1	1	0
0	0	1	1	1
1	X	X	X	X
0	1	1	X	X

D7-D0 : 8-BIT DATA I/O
CLK 0-2 : COUNTER CLOCK
GATE 0-2 : COUNTER GATE
OUT 0-2 : COUNTER OUTPUT
RD : READ COUNTER
WR : WRITE CMD OR DATA
CS : CHIP SELECT
AO,A1 : COUNTER SELECT

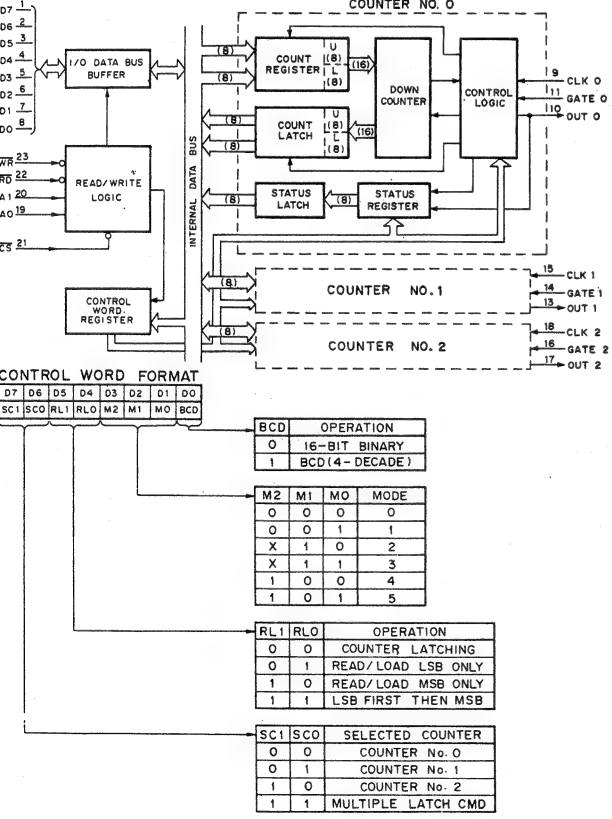
0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
HI-Z: HIGH IMPEDANCE

CXQ70108P-8 (SONY)
C-MOS 8-BIT MICROPROCESSOR
- TOP VIEW -



PIN No.	S/LG=HIGH LEVEL	S/LG=LOW LEVEL	FUNCTION
24	INTAK	QS1	
25	ASTB	QS0	
26	BUFEN	BS0	
27	BUF R/W	BS1	
28	IO/M	BS2	
29	WR	BUSLOCK	
30	HLDAK	RQ/AK1	
31	HLDRO	RQ/AK0	
34	LBSO	HIGH LEVEL	

A8-A15; ADDRESS BUS OUTPUTS
ADO-AD7; ADDRESS/DATA BUS INPUTS/OUTPUTS
NMI; NON-MASKABLE INTERRUPT INPUT
INT; MASKABLE INTERRUPT INPUT
phi; CLOCK INPUT
INTAK; INTERRUPT ACKNOWLEDGE OUTPUT
ASTB; ADDRESS STROBE OUTPUT
BUFEN; BUFFER ENABLE OUTPUT
BUF R/W; BUFFER READ/ WRITE OUTPUT
IO/M; IO/MEMORY OUTPUT
WR; WRITE STROBE OUTPUT
HLDAK; HOLD ACKNOWLEDGE OUTPUT
HLDRO; HOLD REQUEST INPUT
RD; READ STROBE OUTPUT
S/LG; SMALL/LARGE INPUT
LBSO; LATCHED BUS STATUS 0 OUTPUT
A16/PS0-A19/PS3; ADDRESS BUS/PROCESSOR STATUS OUTPUTS
QS0,1; QUEUE STATUS OUTPUTS
BS0-BS2; BUS STATUS OUTPUTS
BUSLOCK; BUS LOCK OUTPUT
RQ/AK0,1; HOLD REQUEST/ACKNOWLEDGE INPUTS/OUTPUTS

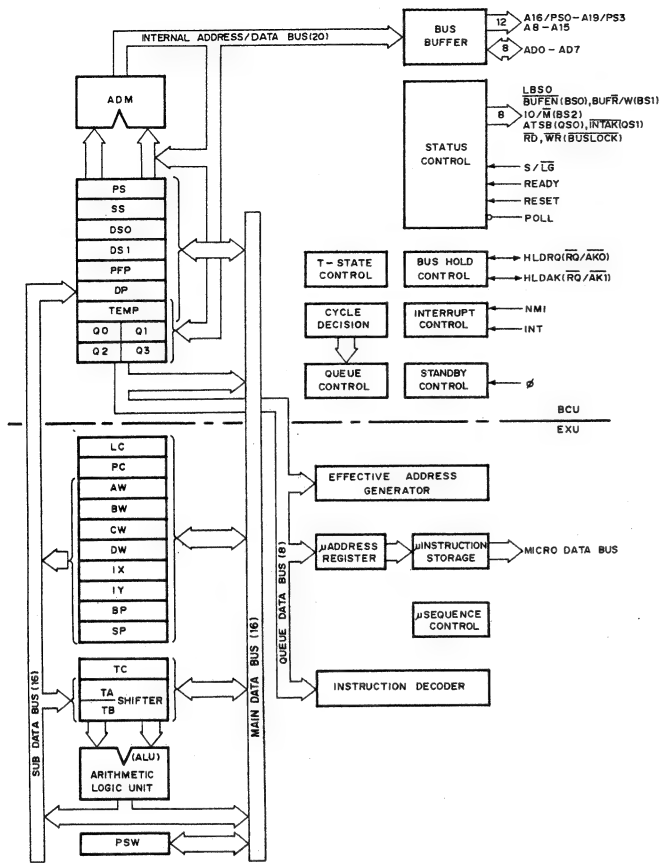


BCD	OPERATION
0	16-BIT BINARY
1	BCD(4-DECADE)

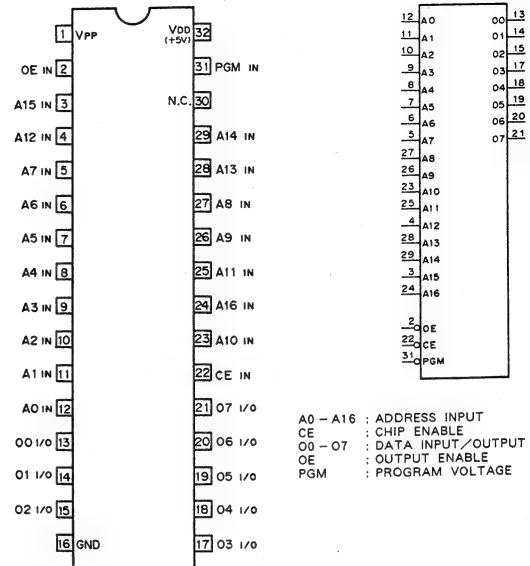
M2	M1	M0	MODE
0	0	0	0
0	0	1	1
X	1	0	2
X	1	1	3
1	0	0	4
1	0	1	5

RL1	RLO	OPERATION
0	0	COUNTER LATCHING
0	1	READ/LOAD LSB ONLY
1	0	READ/LOAD MSB ONLY
1	1	LSB FIRST THEN MSB

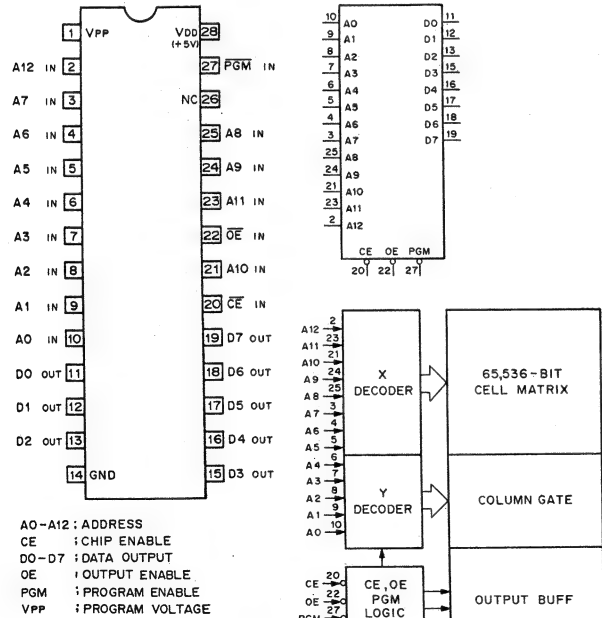
SC1	SCO	SELECTED COUNTER
0	0	COUNTER No. 0
0	1	COUNTER No. 1
1	0	COUNTER No. 2
1	1	MULTIPLE LATCH CMD



HN27C301G-20 (HITACHI) (ACCESS TIME = 200ns)
C-MOS 1048576-BIT (131072x8) PROGRAMMABLE ROM
— TOP VIEW —

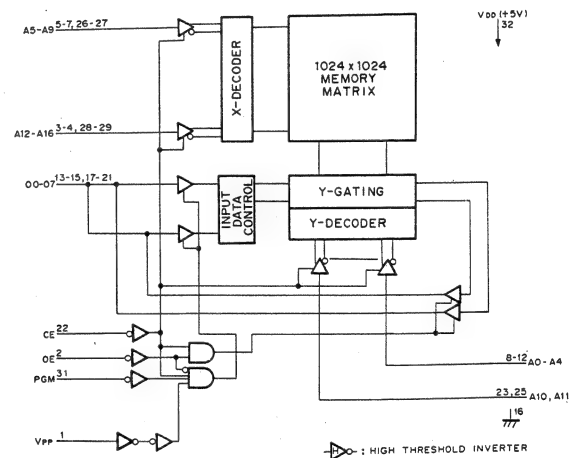


HN27C64G-20 (HITACHI) (ACCESS TIME = 200 ns)
C-MOS 64K (8Kx8) ERASABLE PROM WITH 3-STATE OUTPUTS
— TOP VIEW —



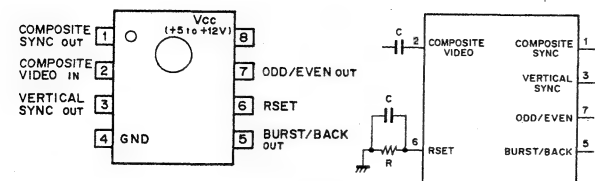
An	CE	OE	PGM	VPP	Dn	FUNCTION
An	0	0	1	+5V	D OUT	READ
An	0	1	1	+5V	HI-Z	OUTPUT DISABLE
An	0	0	0	+5V	HI-Z	OUTPUT DISABLE
X	1	X	X	+5V	HI-Z	STANDBY
An	0	X	1	+21V	D IN	PGM
An	0	0	1	+21V	D OUT	PGM VERIFY
X	1	X	X	+21V	HI-Z	PGM INH

0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE
HI-Z : HIGH IMPEDANCE

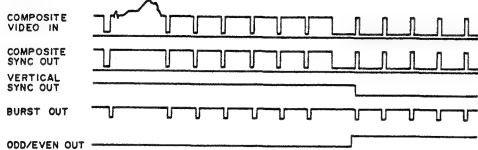


LM1881N (NS)

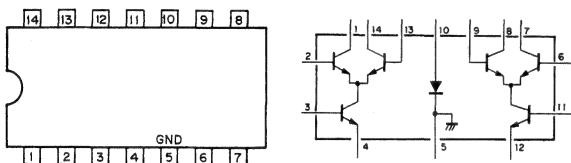
VIDEO SYNC SEPARATOR
- TOP VIEW -



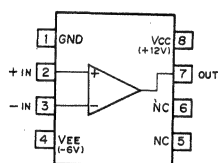
TIMING CHART



M5109P (MITSUBISHI) DIFFERENTIAL AMPLIFIER - TOP VIEW -

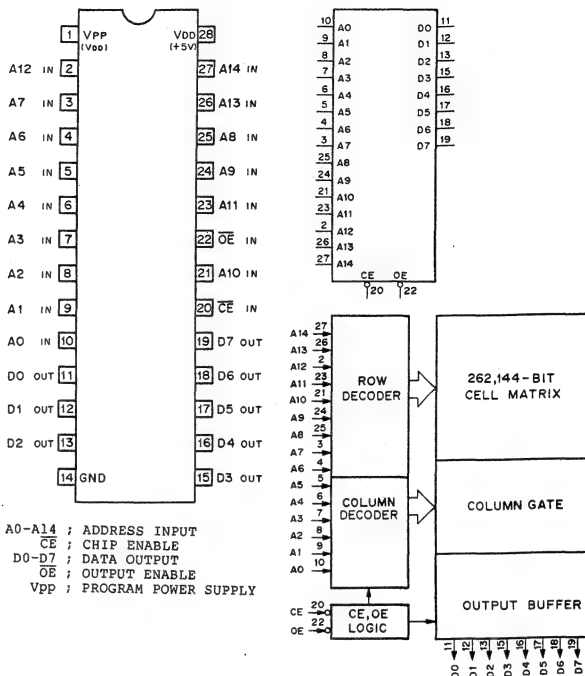


MB4002PF (FUJITSU) FLAT PACKAGE VOLTAGE COMPARATOR - TOP VIEW -



MBM27C256AP-20 (FUJITSU) (ACCESS TIME = 200ns)

C-MOS 256K (32Kx8)-BIT ONE TIME PROM WITH 3-STATE OUTPUTS
- TOP VIEW -



A0-A14 ; ADDRESS INPUT
CE ; CHIP ENABLE
D0-D7 ; DATA OUTPUT
OE ; OUTPUT ENABLE
Vpp ; PROGRAM POWER SUPPLY

An	CE	OE	Vdd	Vpp	Dn	FUNCTION
An	0	0	+5V	+5V	Dout	READ
An	0	1	+5V	+5V	HI-Z	OUTPUT DISABLE
X	1	X	+5V	+5V	HI-Z	STANDBY
An	0	1	+6V	+12.5V	Din	PGM
An	1	0	+6V	+12.5V	Dout	PGM VERIFY(1)
An	0	0	+6V	+12.5V	Dout	PGM VERIFY(2)
X	1	1	+6V	+12.5V	HI-Z	PGM INH
A0	0	0	+5V	+5V	DEVICE CODE	ELECTRONIC SIGNATURE*

* SEE FOLLOWING DESCRIPTION.

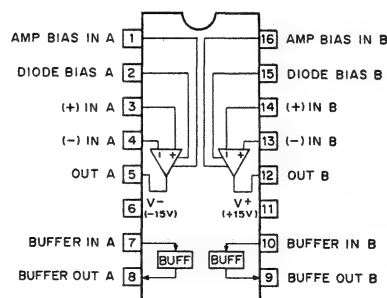
ELECTRONIC SIGNATURE FOR P ROM WRITER

ADDRESS SETTINGS IN READ MODE

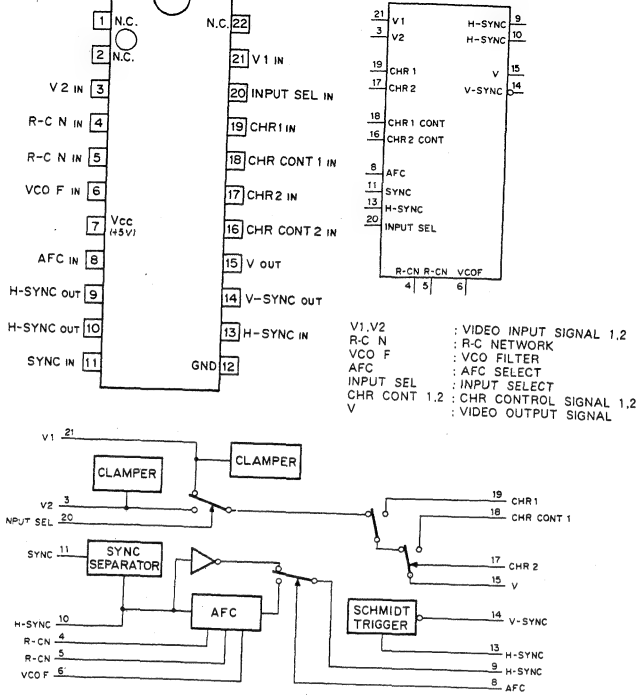
A1-A8	A9	A10-A13	A14, Vpp
0	12V	0	1

	A0	D7	D6	D5	D4	D3	D2	D1	D0
MAKER CODE	0	0	0	0	0	0	1	0	04H
DEVICE CODE	1	0	1	1	0	0	0	1	0 62H

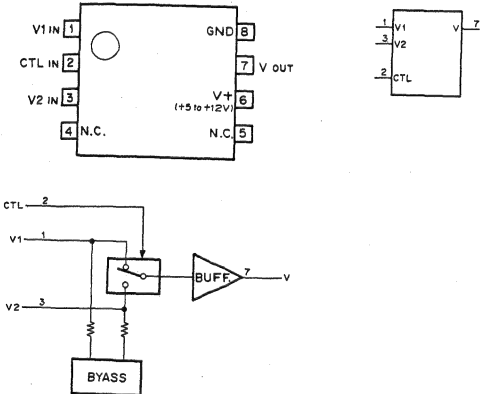
NJM13700M (JRC) FLAT PACKAGE DUAL OPERATIONAL TRANSCONDUCTANCE AMPLIFIER - TOP VIEW -



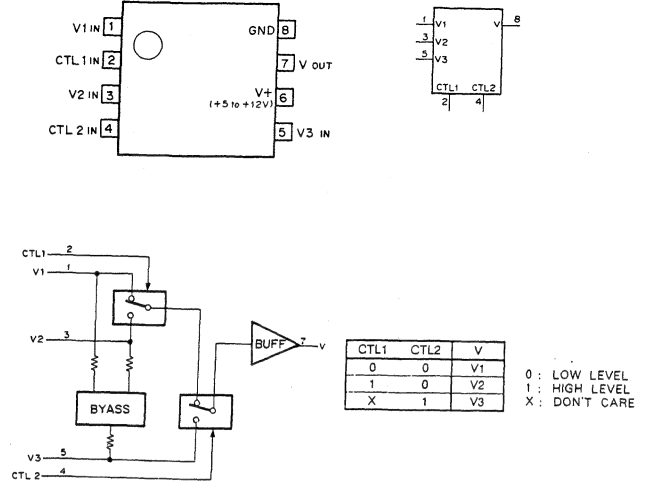
NJM2217L (JRC)
VIDEO SIGNAL ADDER WITH AFC
- TOP VIEW -



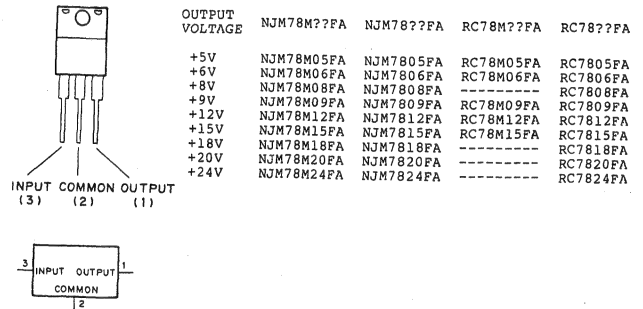
NJM2233AM (JRC) FLAT PACKAGE
2-INPUT SIGNAL VIDEO SWITCH
- TOP VIEW -



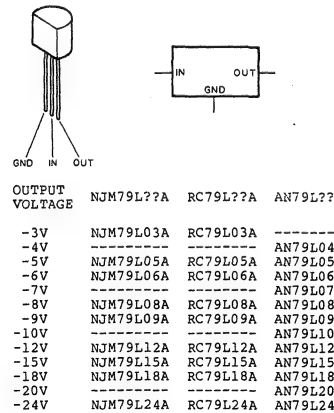
NJM2234M (JRC) FLAT PACKAGE
3-INPUT SIGNAL VIDEO SWITCH
- TOP VIEW -



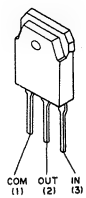
RC78??FA (RAYTHEON)
POSITIVE VOLTAGE REGULATOR
- FRONT VIEW -



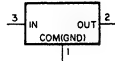
RC79L??FA (RAYTHEON)
NEGATIVE VOLTAGE REGULATOR (100mA)
- FRONT VIEW -



SI-3052V (SANKEN)
POSITIVE VOLTAGE REGULATOR (2A)

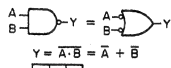
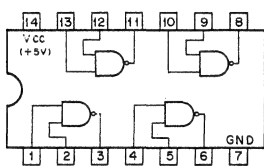


5V SI-3052V
12V SI-3122V



SN74ALS00AN (TI)
SN74LS00N (TI)

TTL 2-INPUT POSITIVE-NAND GATE
- TOP VIEW -



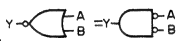
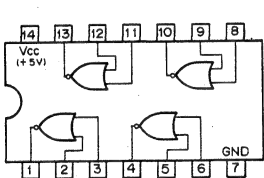
$$Y = \overline{A \cdot B} = \overline{A} + \overline{B}$$

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0: LOW LEVEL
1: HIGH LEVEL

SN74ALS02N (TI)
SN74LS02N (TI)

TTL 2-INPUT POSITIVE-NOR GATE
- TOP VIEW -



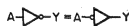
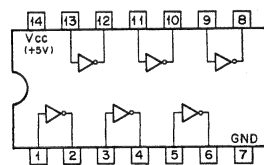
$$Y = \overline{A + B} = \overline{A} \cdot \overline{B}$$

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

0: LOW LEVEL
1: HIGH LEVEL

SN74ALS04BN (TI)
SN74ALS04BNS (TI) FLAT PACKAGE
SN74LS04N (TI)
SN74LS04NS (TI) FLAT PACKAGE

TTL INVERTER
- TOP VIEW -



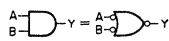
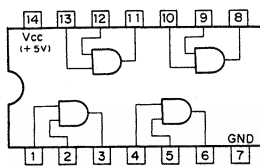
$$Y = \overline{A}$$

A	Y
0	1
1	0

0: LOW LEVEL
1: HIGH LEVEL

SN74ALS08N (TI)
SN74ALS08NS (TI) FLAT PACKAGE
SN74LS08N (TI)
SN74LS08NS (TI) FLAT PACKAGE

TTL 2-INPUT POSITIVE-AND GATE
- TOP VIEW -



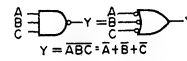
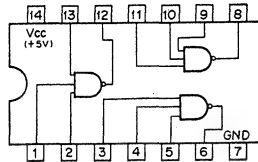
$$Y = A \cdot B = \overline{\overline{A} + \overline{B}}$$

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

0: LOW LEVEL
1: HIGH LEVEL

SN74ALS10AN (TI)
SN74LS10N (TI)

TTL 3-INPUT POSITIVE NAND GATE
- TOP VIEW -



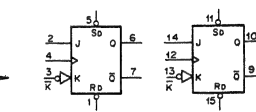
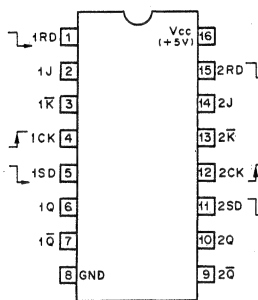
$$Y = \overline{A \cdot B \cdot C} = \overline{A} + \overline{B} + \overline{C}$$

A	B	C	Y
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	0

0: LOW LEVEL
1: HIGH LEVEL

SN74ALS109ANS (TI) FLAT PACKAGE
SN74LS109AN (TI)

TTL J-K FLIP-FLOP WITH DIRECT SET/RESET
- TOP VIEW -

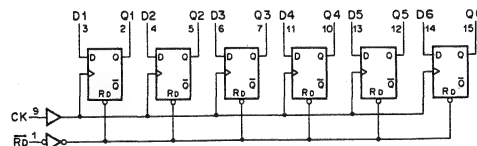
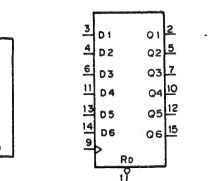
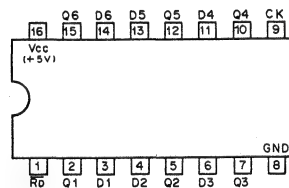


INPUTS				OUTPUTS	
S ₀	R ₀	CK	J	K	Q _{n+1} Q _n
0	1	X	X	X	1 0
1	0	X	X	X	0 1
0	0	X	X	X	1* 1*
0	1	0	0	0	Q _n Q _n
1	1	0	0	0	Q _n Q _n
1	1	0	1	1	Q _n Q _n

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
*: NONSTABLE

SN74ALS174N (TI)
SN74LS174N (TI)

TTL D-TYPE FLIP-FLOP WITH DIRECT RESET
- TOP VIEW -



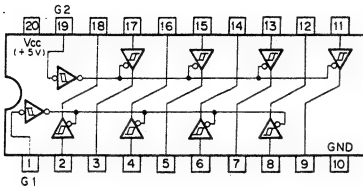
EACH FLIP-FLOP

INPUTS		OUT
R ₀	CK	Q
0	X	X
1	0	0
1	1	1
1	0	Q ₀

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE

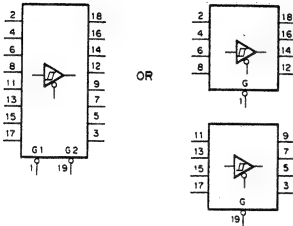
SN74ALS244B1NS (TI) FLAT PACKAGE
 SN74ALS244BN (TI)
 SN74LS244N (TI)

TTL 3-STATE SCHMITT TRIGGER BUFFER/DRIVER
 - TOP VIEW -



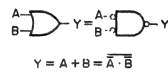
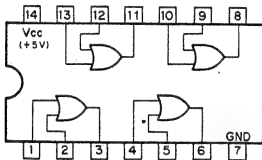
G	A	Y
0	0	0
0	1	1
1	X	HI-Z

0: LOW LEVEL
 1: HIGH LEVEL
 X: DON'T CARE
 HI-Z: HIGH IMPEDANCE



SN74ALS32N (TI)
 SN74ALS32NS (TI) FLAT PACKAGE
 SN74LS32N (TI)
 SN74LS32NS (TI) FLAT PACKAGE

TTL 2-INPUT POSITIVE-OR GATE
 - TOP VIEW -

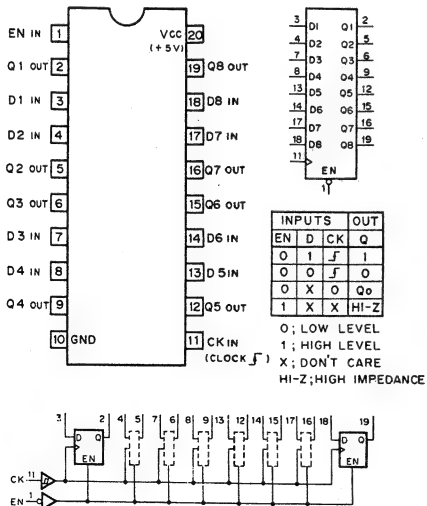


A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

0: LOW LEVEL
 1: HIGH LEVEL

SN74ALS374N (TI)
 SN74LS374N (TI)
 SN74LS374NS (TI) FLAT PACKAGE

TTL 3-STATE OUTPUTS OCTAL D-TYPE FLIP-FLOP
 - TOP VIEW -

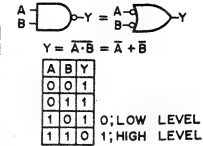
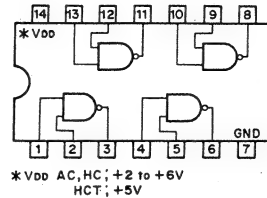


INPUTS			OUT
EN	D	CK	Q
0	1	1	1
0	0	1	0
0	X	0	Q ₀
1	X	X	HI-Z

0: LOW LEVEL
 1: HIGH LEVEL
 X: DON'T CARE
 HI-Z: HIGH IMPEDANCE

SN74HC00NS (TI) FLAT PACKAGE
 TC74HC00F (TOSHIBA) FLAT PACKAGE

C-MOS 2-INPUT NAND GATE
 - TOP VIEW -

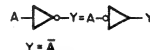
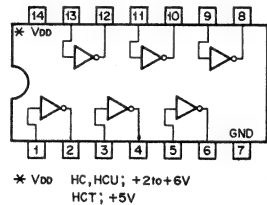


A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0: LOW LEVEL
 1: HIGH LEVEL

SN74HC04NS (TI) FLAT PACKAGE
 TC74HC04F (TOSHIBA) FLAT PACKAGE

C-MOS INVERTER
 - TOP VIEW -

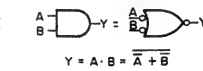
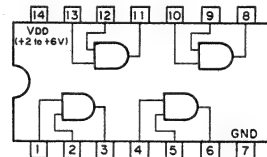


A	Y
0	1
1	0

0: LOW LEVEL
 1: HIGH LEVEL

SN74HC08NS (TI) FLAT PACKAGE
 TC74HC08F (TOSHIBA) FLAT PACKAGE

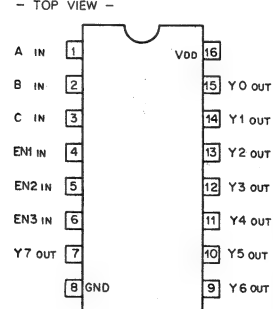
C-MOS 2-INPUT AND GATE
 - TOP VIEW -



A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

0: LOW LEVEL
 1: HIGH LEVEL

SN74HC138NS (TI) (V_{DD} = +2 to +6V) FLAT PACKAGE
 C-MOS 3-TO-8 LINE DECODER/DEMULPLEXER
 - TOP VIEW -



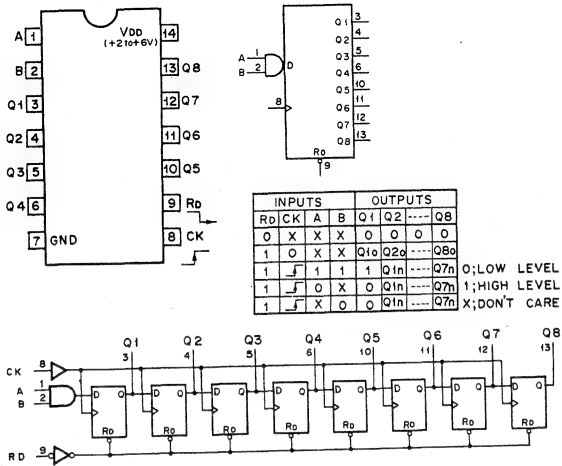
1	A	Y ₀	15
2	B	Y ₁	14
3	C	Y ₂	13
		Y ₃	
		Y ₄	11
EN ₁ 5		Y ₅	10
EN ₂ 5	EN	Y ₆	9
EN ₃ 6		Y ₇	7

INPUTS				OUTPUTS							
EN	C	B	A	Y ₀	Y ₁	Y ₂	Y ₃	Y ₄	Y ₅	Y ₆	Y ₇
0	X	X	X	1	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1	1	1	1	0
1	0	0	1	1	1	1	1	1	1	1	0
1	0	1	0	1	1	1	1	1	1	0	1
1	0	1	1	1	1	1	1	1	0	1	1
1	1	0	0	1	1	1	0	1	1	1	1
1	1	0	1	1	1	0	1	1	1	1	1
1	1	1	0	1	0	1	1	1	1	1	1
1	1	1	1	0	1	1	1	1	1	1	1

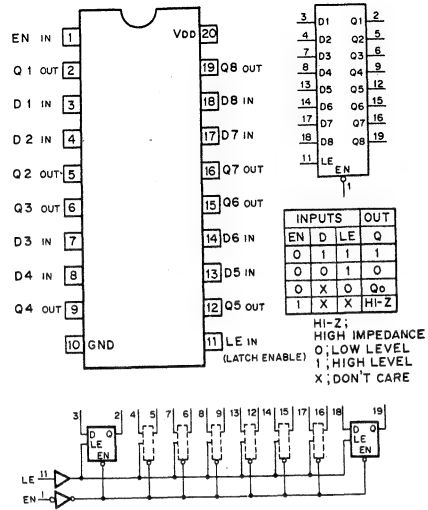
EN = EN₁-EN₂-EN₃

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE

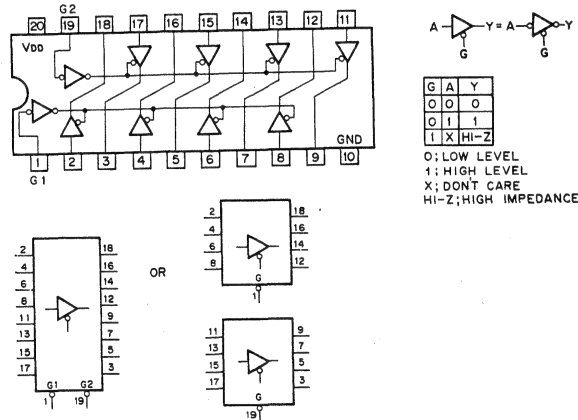
SN74HC164NS (TI) FLAT PACKAGE
C-MOS 8-BIT SERIAL-IN/PARALLEL-OUT SHIFT REGISTER
- TOP VIEW -



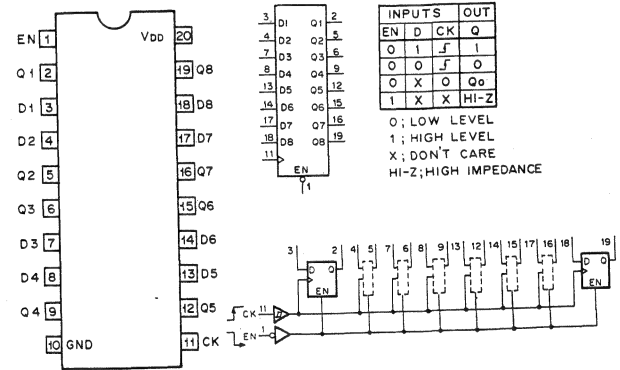
SN74HC373NS (TI) (V_{DD} = +2 to +6V) FLAT PACKAGE
C-MOS 3-STATE OUTPUTS OCTAL LATCHES
- TOP VIEW -



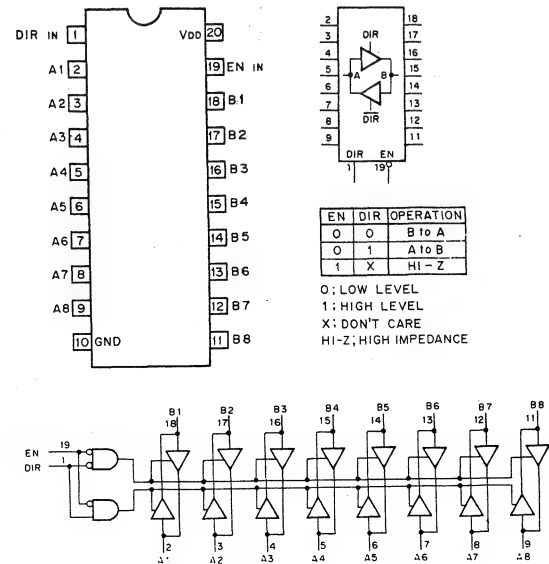
SN74HC244NS (TI) (V_{DD} = +2 to +6V) FLAT PACKAGE
C-MOS BUS BUFFER WITH 3-STATE OUTPUTS
- TOP VIEW -



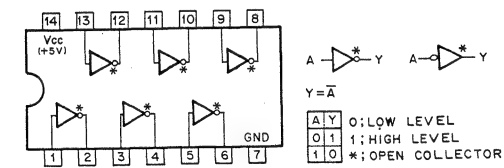
SN74HC374NS (TI) (V_{DD} = +2 to +6V) FLAT PACKAGE
C-MOS 3-STATE OCTAL D-TYPE FLIP-FLOP
- TOP VIEW -



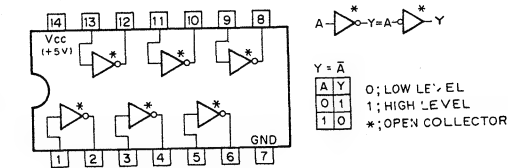
SN74HC245NS (TI) (V_{DD} = +2 to +6V) FLAT PACKAGE
C-MOS BILATERAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS
- TOP VIEW -



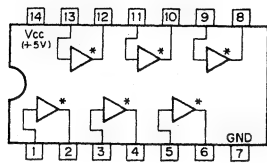
SN74LS05NS (TI) FLAT PACKAGE
TTL INVERTER WITH OPEN-COLLECTOR
- TOP VIEW -



SN74LS06NS (TI) FLAT PACKAGE
TTL INVERTER BUFFER/DRIVER WITH OPEN-COLLECTOR
- TOP VIEW -



SN74LS07NS (TI) FLAT PACKAGE

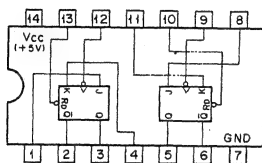
TTL BUFFER/DRIVER WITH OPEN-COLLECTOR
— TOP VIEW —

$$Y = A$$

A	Y
0	0
1	1
*	*

0; LOW LEVEL
1; HIGH LEVEL
*; OPEN COLLECTOR

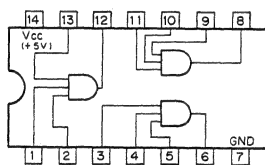
SN74LS107AN (TI)

TTL J-K FLIP FLOP WITH DIRECT RESET
— TOP VIEW —

INPUTS				OUT
Rd	CK	J	K	Qn+1
0	X	X	X	0
1	0	0	0	Qn
1	0	0	1	0
1	0	1	0	1
1	0	1	1	Qn
1	1	X	X	Qn

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

SN74LS11N (TI)

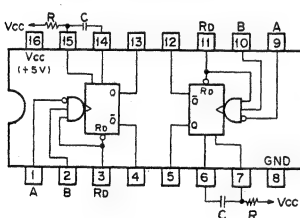
TTL 3-INPUT POSITIVE-AND GATE
— TOP VIEW —

$$Y = A \cdot B \cdot C$$

A	B	C	Y
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

0; LOW LEVEL
1; HIGH LEVEL

SN74LS123NS (TI) FLAT PACKAGE

TTL RETRIGGERABLE MONOSTABLE MULTIVIBRATOR WITH DIRECT RESET
— TOP VIEW —

INPUTS				OUTPUTS	
Rd	A	B	C	Q	Q'
0	X	X	X	0	1
1	0	0	0	0	1
1	0	0	1	0	1
1	0	1	0	0	1
1	0	1	1	0	1
1	1	0	0	0	1
1	1	0	1	0	1
1	1	1	0	0	1
1	1	1	1	1	0

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

OUTPUT PULSE WIDTH

$$T_w = 0.28 \left(1 + \frac{700}{R} \right) CR$$

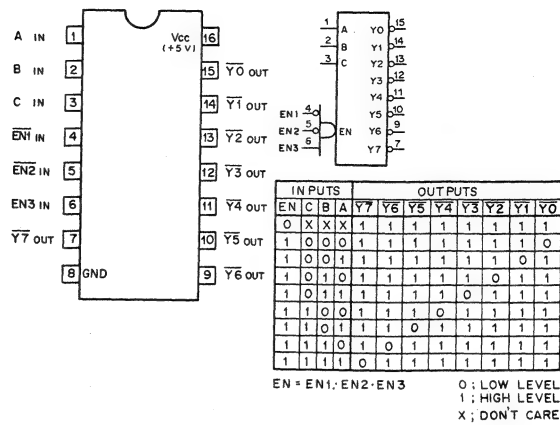
$$T_w = 0.33 \left(1 + \frac{700}{R} \right) CR$$

$$T_w = 0.25 \left(1 + \frac{700}{R} \right) CR$$

$$T_w = 0.29 \left(1 + \frac{700}{R} \right) CR$$

$$T_w = 0.45 CR$$

SN74LS138N (TI)

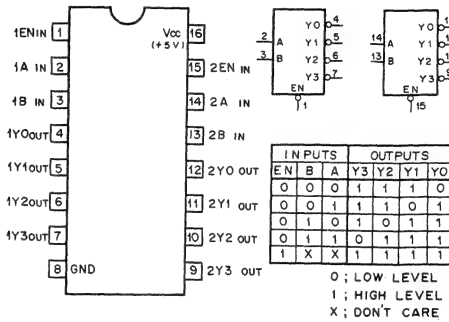
TTL 3-TO-8-LINE DECODER/DEMULTIPLEXER
— TOP VIEW —

IN PUTS				OUT PUTS							
EN	C	B	A	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0
0	X	X	X	1	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1	1	1	1	0
1	0	0	1	1	1	1	1	1	1	0	1
1	0	1	0	1	1	1	1	1	0	1	1
1	0	1	1	1	1	1	1	0	1	1	1
1	1	0	0	1	1	1	0	1	1	1	1
1	1	0	1	1	1	0	1	1	1	1	1
1	1	1	0	1	0	1	1	1	1	1	1
1	1	1	1	0	1	1	1	1	1	1	1

EN = EN1; EN2; EN3

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

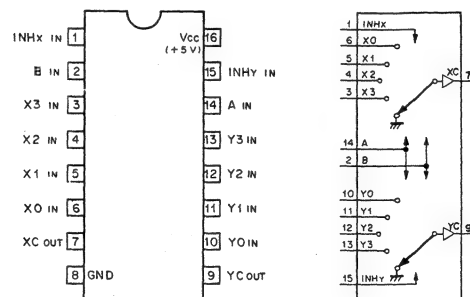
SN74LS139N (TI)

TTL 2-TO-4-LINE DECODER/DEMULTIPLEXER
— TOP VIEW —

INPUTS			OUTPUTS			
EN	B	A	Y3	Y2	Y1	Y0
0	0	0	1	1	1	1
0	0	1	1	1	0	1
0	1	0	1	0	1	1
0	1	1	0	1	1	1
1	X	X	1	1	1	1

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

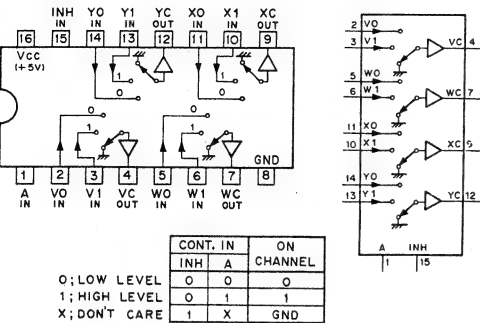
SN74LS153N (TI)

TTL 4-LINE-TO-1-LINE DATA SELECTOR/MULTIPLEXER
— TOP VIEW —

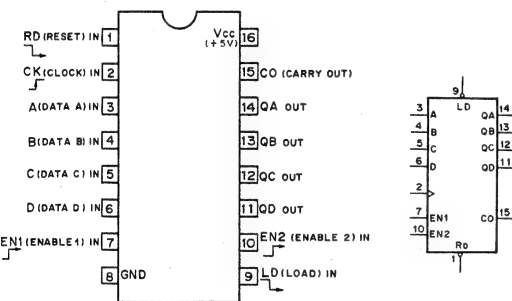
CONTROL IN			ON CHANNEL
INH	B	A	
0	0	0	0
0	0	1	1
0	1	0	2
0	1	1	3
1	X	X	GND

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

SN74LS157N (TI)
SN74LS157NS (TI) FLAT PACKAGE
TTL 2-LINE-TO-1-LINE DATA SELECTOR/MULTIPLEXER
— TOP VIEW —



SN74LS161AN (TI)
TTL PRESETTABLE SYNCHRONOUS 4-BIT BINARY COUNTER
— TOP VIEW —



MODE SELECTION				
CONTROL		INPUTS		MODE
Rd	LD	EN1	EN2	
0	X	X	X	RESET (ASYNCHRONOUS)
1	0	X	X	PRESET (SYNCHRONOUS)
1	1	0	X	NO COUNT
1	1	X	0	NO COUNT
1	1	1	1	COUNT

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

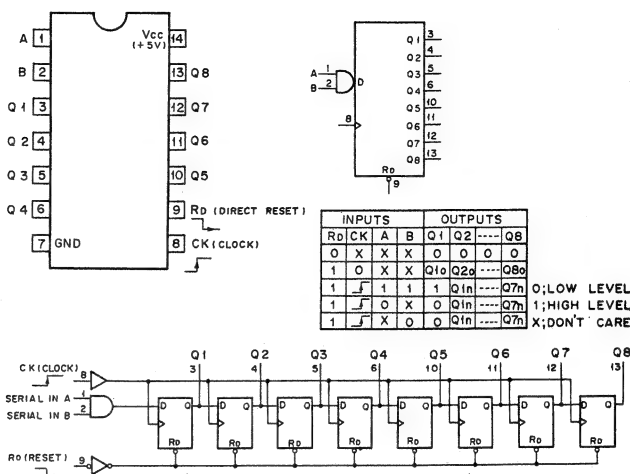
CARRY OUTPUT "CO"



CO IS HIGH WHEN EN2 INPUT IS HIGH AND COUNT IS '15'.

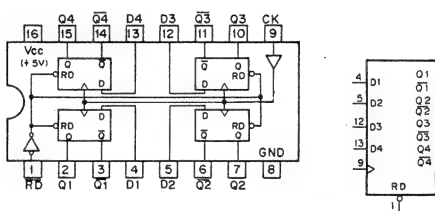
COUNT SEQUENCE				
COUNT	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

SN74LS164N (TI)
TTL 8-BIT PARALLEL-OUT SERIAL SHIFT REGISTER
— TOP VIEW —



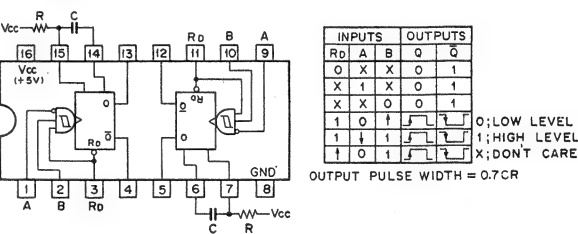
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

SN74LS175N (TI)
TTL D-TYPE FLIP-FLOP WITH CLEAR
— TOP VIEW —



0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

SN74LS221NS (TI) FLAT PACKAGE
TTL MONOSTABLE MULTIVIBRATOR WITH SCHMITT TRIGGER INPUT
— TOP VIEW —

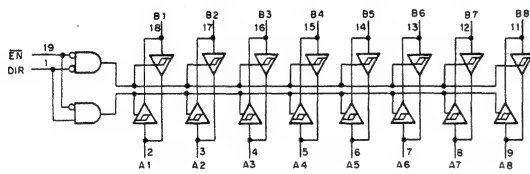
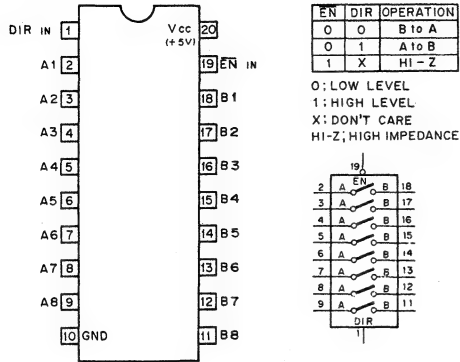


0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

OUTPUT PULSE WIDTH = 0.7CR

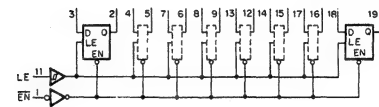
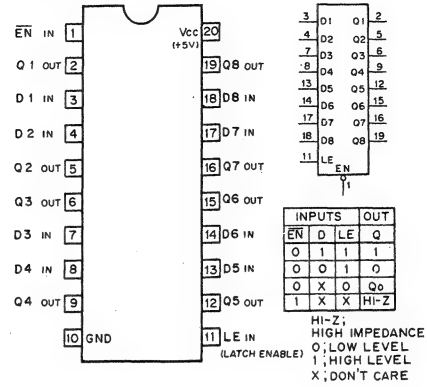
SN74LS245N (TI)

TTL BILATERAL SCHMITT TRIGGER BUS TRANSCEIVERS
WITH 3-STATE OUTPUTS
— TOP VIEW —



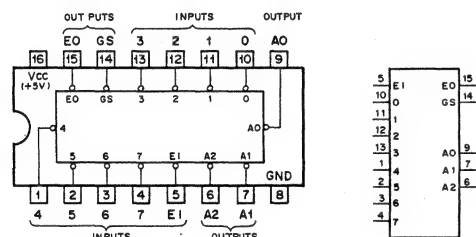
SN74LS373N (TI)

TTL 3-STATE OUTPUTS OCTAL LATCHES
— TOP VIEW —



SN74LS348N (TI)

TTL 8-LINE-TO 3-LINE PRIORITY ENCODERS WITH 3-STATE OUTPUTS
— TOP VIEW —

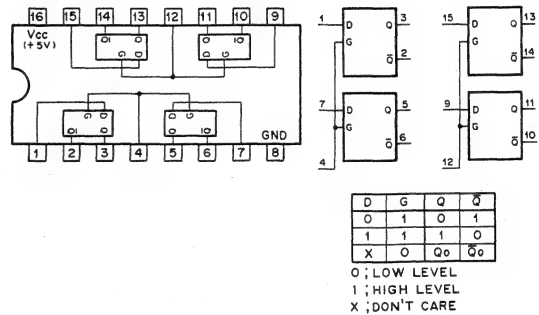


INPUTS										OUTPUTS				
E1	0	1	2	3	4	5	6	7	A2	A1	A0	GS	E0	
1	X	X	X	X	X	X	X	X	Z	Z	Z	1	1	
0	1	1	1	1	1	1	1	1	Z	Z	Z	1	0	
0	X	X	X	X	X	X	X	0	0	0	0	0	1	
0	X	X	X	X	X	X	0	1	0	0	1	0	1	
0	X	X	X	X	X	0	1	1	0	1	0	0	1	
0	X	X	X	X	0	1	1	1	0	1	1	0	1	
0	X	X	X	0	1	1	1	1	1	0	0	0	1	
0	X	X	0	1	1	1	1	1	1	0	1	0	1	
0	X	0	1	1	1	1	1	1	1	1	0	0	1	
0	0	1	1	1	1	1	1	1	1	1	1	0	1	

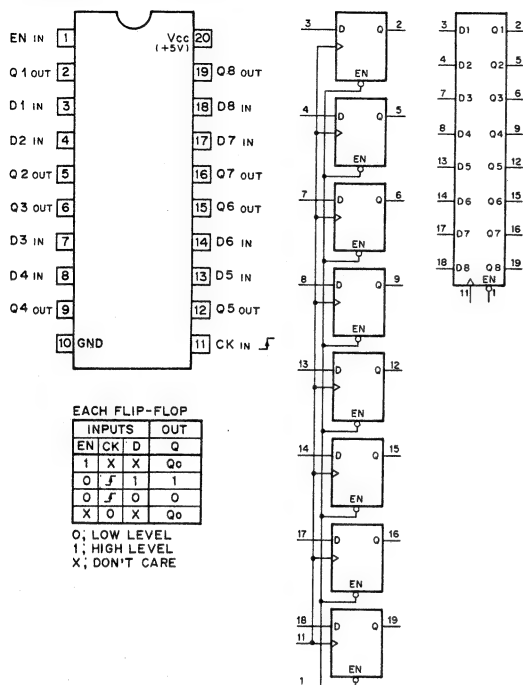
0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
Z: HIGH IMPEDANCE

SN74LS375N (TI)

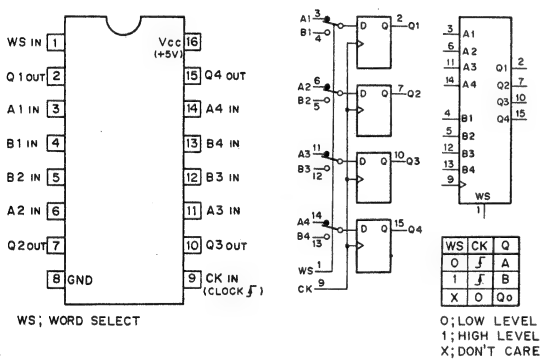
TTL BISTABLE LATCH
— TOP VIEW —



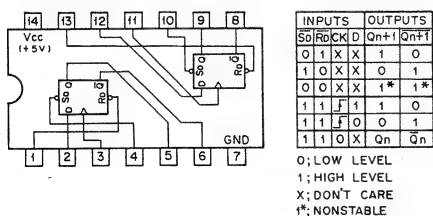
SN74LS377N (TI)
TTL D-TYPE FLIP-FLOP WITH ENABLE
— TOP VIEW —



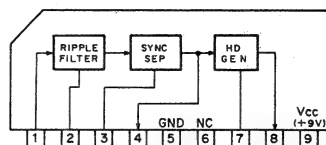
SN74LS399NS (TI) FLAT PACKAGE
TTL QUAD 2-INPUT MULTIPLEXER WITH STORAGE
— TOP VIEW —



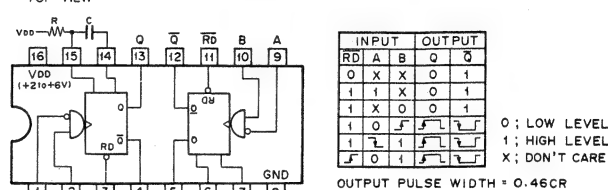
SN74LS74AN (TI)
SN74LS74ANS (TI) FLAT PACKAGE
TTL D-TYPE FLIP FLOP WITH DIRECT SET/RESET
— TOP VIEW —



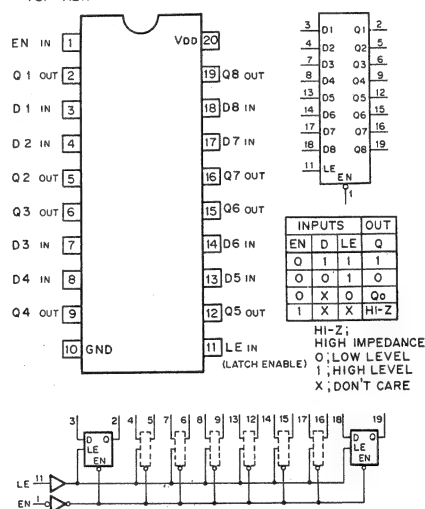
TA7357AP (TOSHIBA)
SYNC SEPARATOR/HD PULSE GENERATOR
— SIDE VIEW —



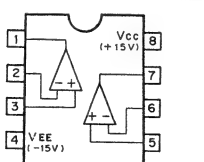
TC74HC123F (TOSHIBA) FLAT PACKAGE
C-MOS DUAL RETRIGGERABLE MONOSTABLE MULTIVIBRATOR
— TOP VIEW —



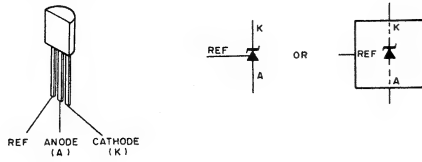
TC74HC373F (TOSHIBA) (V_{DD} = +2 to +6V) FLAT PACKAGE
C-MOS 3-STATE OUTPUTS OCTAL LATCHES
— TOP VIEW —



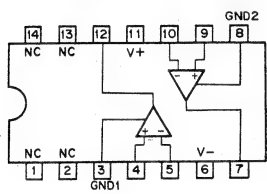
TL082CPS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER
(J FET-INPUT)
— TOP VIEW —



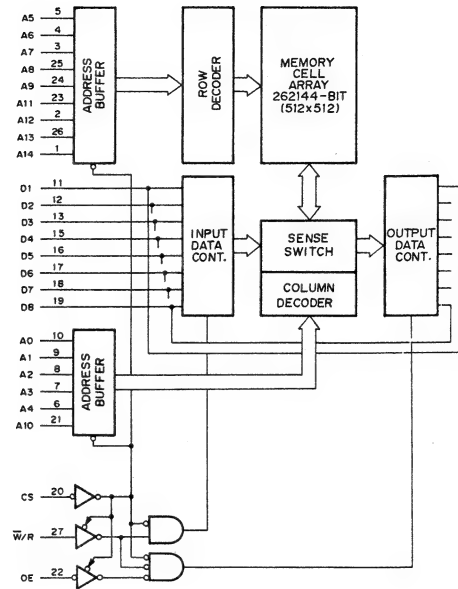
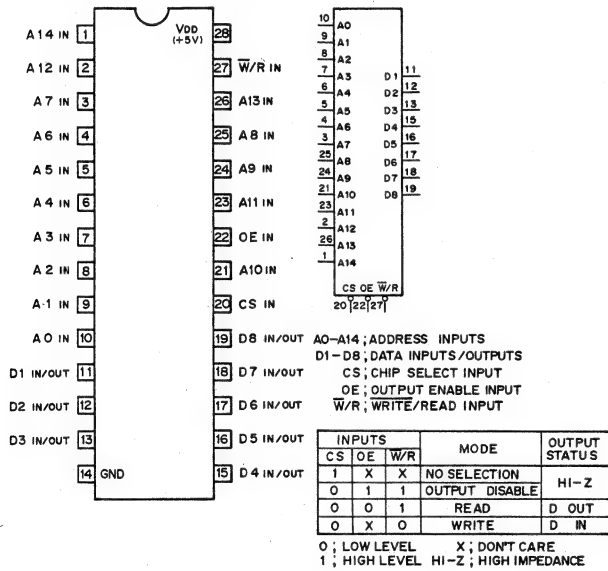
TL431CLP (T1)
TL431CLPB (T1)
ADJUSTABLE PRECISION SHUNT REGULATOR



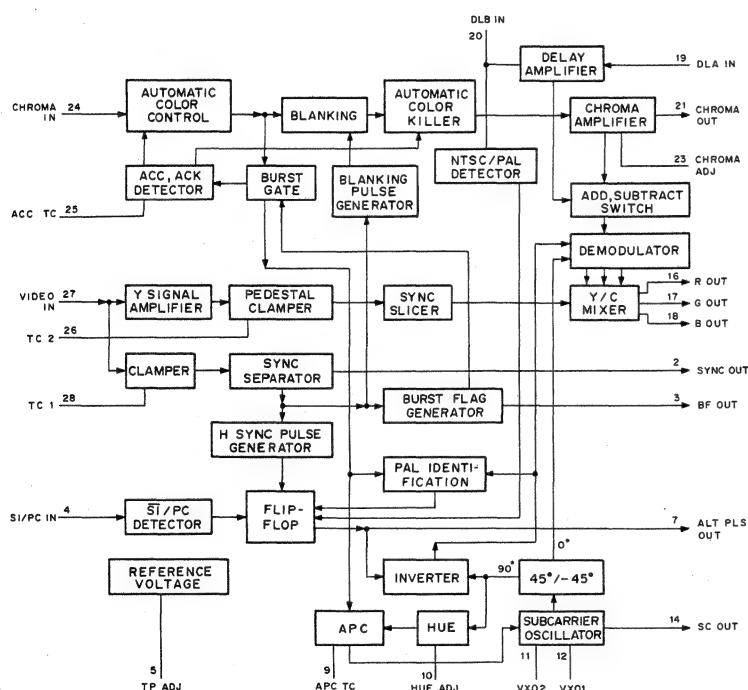
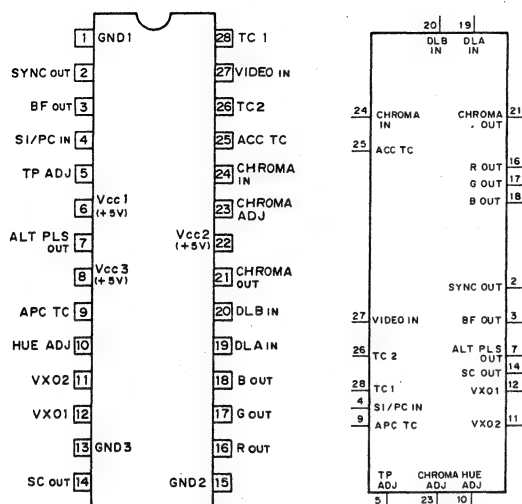
uPC319G2 (NEC) FLAT PACKAGE
VOLTAGE COMPARATOR
— TOP VIEW —



uPD43256C-10L (NEC) (ACCESS TIME = 100ns)
uPD43256G-10L (NEC) (ACCESS TIME = 100ns) FLAT PACKAGE
C-MOS 262144-BIT (32768x8) STATIC RAM
— TOP VIEW —

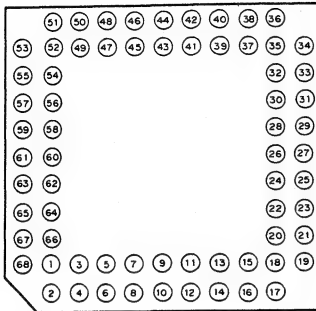


V7020 (SONY)
NTSC/PAL DECODER
— TOP VIEW —

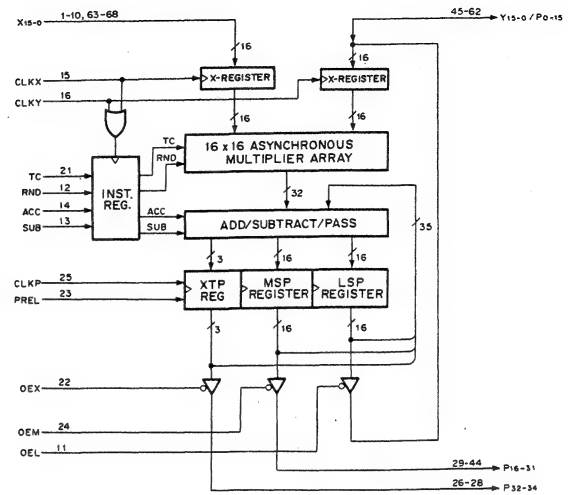


FUNCTION TABLE		
PIN	SYMBOLIC NAME	DESCRIPTION
1	GND1	GROUND FOR Y SIGNAL AMPLIFIER AND SYNCHRONIZING SIGNAL SEPARATOR
2	SYNC OUT	SYNCHRONIZING SIGNAL OUTPUT (TTL LEVEL)
3	BF OUT	BURST FLAG OUTPUT (TTL LEVEL)
4	SI/PC IN	SUPERIMPOSE OR PERSONAL COMPUTER SELECTION SIGNAL INPUT SI MODE:LOW, PC MODE:HIGH
5	TP ADJ	BURST FLAG POSITION ADJUSTMENT
6	Vcc1	Vcc FOR Y SIGNAL AMPLIFIER AND SYNCHRONIZING SIGNAL SEPARATOR
7	ALT PLS OUT	LINE ALTERNATION PULSE OUTPUT NTSC MODE:LOW PAL MODE:LINE ALTERNATION PULSE
8	Vcc3	Vcc FOR APC, HUE, AND VXO STAGES
9	APC TC	AUTOMATIC PHASE CONTROL TIME CONSTANT
10	HUE ADJ	HUE ADJUSTMENT
11	VXO2	CRYSTAL OSCILLATOR
12	VXO1	
13	GND3	GROUND FOR APC, HUE, AND VXO STAGES
14	SC OUT	SUBCARRIER SIGNAL OUTPUT
15	GND2	GROUND FOR DEMODULATOR AND Y/C MIXER
16	R OUT	RED SIGNAL OUTPUT
17	G OUT	GREEN SIGNAL OUTPUT
18	B OUT	BLUE SIGNAL OUTPUT
19	DLA IN	DELAY AMPLIFIER INPUT
20	DLB IN	MODE SELECTION AND DELAY AMPLIFIER GAIN BIAS NTSC MODE: $V_{20} \leq 0.8V$ PAL MODE: $2.0V \leq V_{20} \leq 2.8V$ V_{20} IS THE VOLTAGE MUST BE APPLIED
21	CHROMA OUT	CHROMA SIGNAL OUTPUT
22	Vcc2	Vcc FOR DEMODULATOR AND Y/C MIXER
23	CHROMA ADJ	MODE SELECTION AND CHROMA AMPLIFIER GAIN ADJUSTMENT BLACK/WHITE MODE: $V_{23} \leq 0.8V$ COLOR MODE: $2.0V \leq V_{23} \leq 3.0V$ V_{23} IS THE VOLTAGE MUST BE APPLIED
24	CHROMA IN	CHROMA SIGNAL INPUT
25	ACC TC	AUTOMATIC COLOR CONTROL TIME CONSTANT
26	TC	TIME CONSTANT FOR PEDESTAL CLAMPER
27	VIDEO IN	VIDEO SIGNAL INPUT
28	TC1	TIME CONSTANT FOR SYNCHRONIZING SIGNAL SEPARATOR

WS59510-50J (WSI) FLAT PACKAGE
16x16 MULTIPLIER ACCUMULATOR
- TOP VIEW -



PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	I	X6	24	I	OEM	47	I/O	P13, Y13
2	I	X7	25	I	CLKP	48	I/O	P12, Y12
3	I	X8	26	I/O	P34	49	I/O	P11, Y11
4	I	X9	27	I/O	P33	50	I/O	P10, Y10
5	I	X10	28	I/O	P32	51	I/O	P9, Y9
6	I	X11	29	I/O	P31	52	I/O	P8, Y8
7	I	X12	30	I/O	P30	53	-	GND
8	I	X13	31	I/O	P29	54	-	GND
9	I	X14	32	I/O	P28	55	I/O	P7, Y7
10	I	X15	33	I/O	P27	56	I/O	P6, Y6
11	I	OEL	34	I/O	P26	57	I/O	P5, Y5
12	I	RND	35	I/O	P25	58	I/O	P4, Y4
13	I	SUB	36	I/O	P24	59	I/O	P3, Y3
14	I	ACC	37	I/O	P23	60	I/O	P2, Y2
15	I	CLKX	38	I/O	P22	61	I/O	P1, Y1
16	I	CLKY	39	I/O	P21	62	I/O	P0, Y0
17	-	Vcc (+5V)	40	I/O	P20	63	I	X0
18	-	Vcc (+5V)	41	I/O	P19	64	I	X1
19	-	Vcc (+5V)	42	I/O	P18	65	I	X2
20	-	Vcc (+5V)	43	I/O	P17	66	I	X3
21	I	TC	44	I/O	P16	67	I	X4
22	I	OEX	45	I/O	P15, Y15	68	I	X5
23	I	PREL	46	I/O	P14, Y14			



14	ACC	P0, Y0	62
25	CLKP	P1, Y1	61
15	CLKX	P2, Y2	60
16	CLKY	P3, Y3	59
11	OEL	P4, Y4	58
24	OEM	P5, Y5	57
22	OEX	P6, Y6	56
		P7, Y7	55
63	X0	P8, Y8	54
64	X1	P9, Y9	53
65	X2	P10, Y10	52
66	X3	P11, Y11	51
67	X4	P12, Y12	50
68	X5	P13, Y13	49
1	X6	P14, Y14	48
2	X7	P15, Y15	47
3	X8	P16	46
4	X9	P17	45
5	X10	P18	44
6	X11	P19	43
7	X12	P20	42
8	X13	P21	41
9	X14	P22	40
10	X15	P23	39
		P24	38
23	PREL	P25	37
12	RND	P26	36
13	SUB	P27	35
21	TC	P28	34
		P29	33
		P30	32
		P31	31
		P32	30
		P33	29
		P34	28
			27
			26

ACC : ACCUMULATE
CLKP : CLOCK
CLKX : CLOCK
CLKY : CLOCK
OEL : OUTPUT ENABLE LEAST
OEM : OUTPUT ENABLE MOST
OEX : OUTPUT ENABLE EXTENDED
P0 - P34 : BIDIRECTIONAL PORT
PREL : PRELOAD
RND : ROUND
SUB : SUBTRACTION
TC : TWO'S COMPLEMENT
X0 - X15 : MULTIPLIER DATA INPUT
Y0 - Y15 : BIDIRECTIONAL PORT

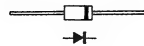
2SA1048
2SA1115



2SC2901



1SS119



2SA1175

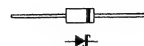
TYPE NO.
PRINTED



2SK152



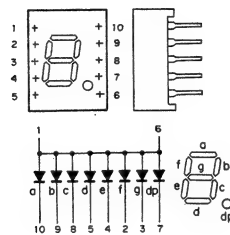
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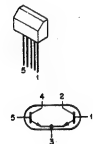
2SA995



GL-9D03D : RED



2SC1583



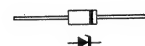
LT-9230N2 : YELLOWISH GREEN



2SC2026
2SC2570A

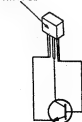


RD 7 7ESB 7

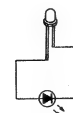


2SC2785

TYPE NO.
PRINTED



TLY123 : YELLOW



等価回路はICメーカーのData Bookに従いました。

The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

SECTION 7 SCHEMATIC DIAGRAMS

Circuit information is provided below.

BOARD	FUNCTION
AD-44P	A/D Converter
DA-33P	D/A Converter
MY-41P	Memory Board
SY-146P	System Control Board
PU-69	Process Board
KY-163	Function Keyboard
MB-249	Mother Board
LE-55	Power Indicator
CN-231	Connector Board

回路図内において、REF. NO の近傍に下記記号が記載されていますが、これは生産時の部品データです。

In the schematic diagrams, the following marks are described nearby reference number.
These are parts data at factory.

CAPACITOR (C)

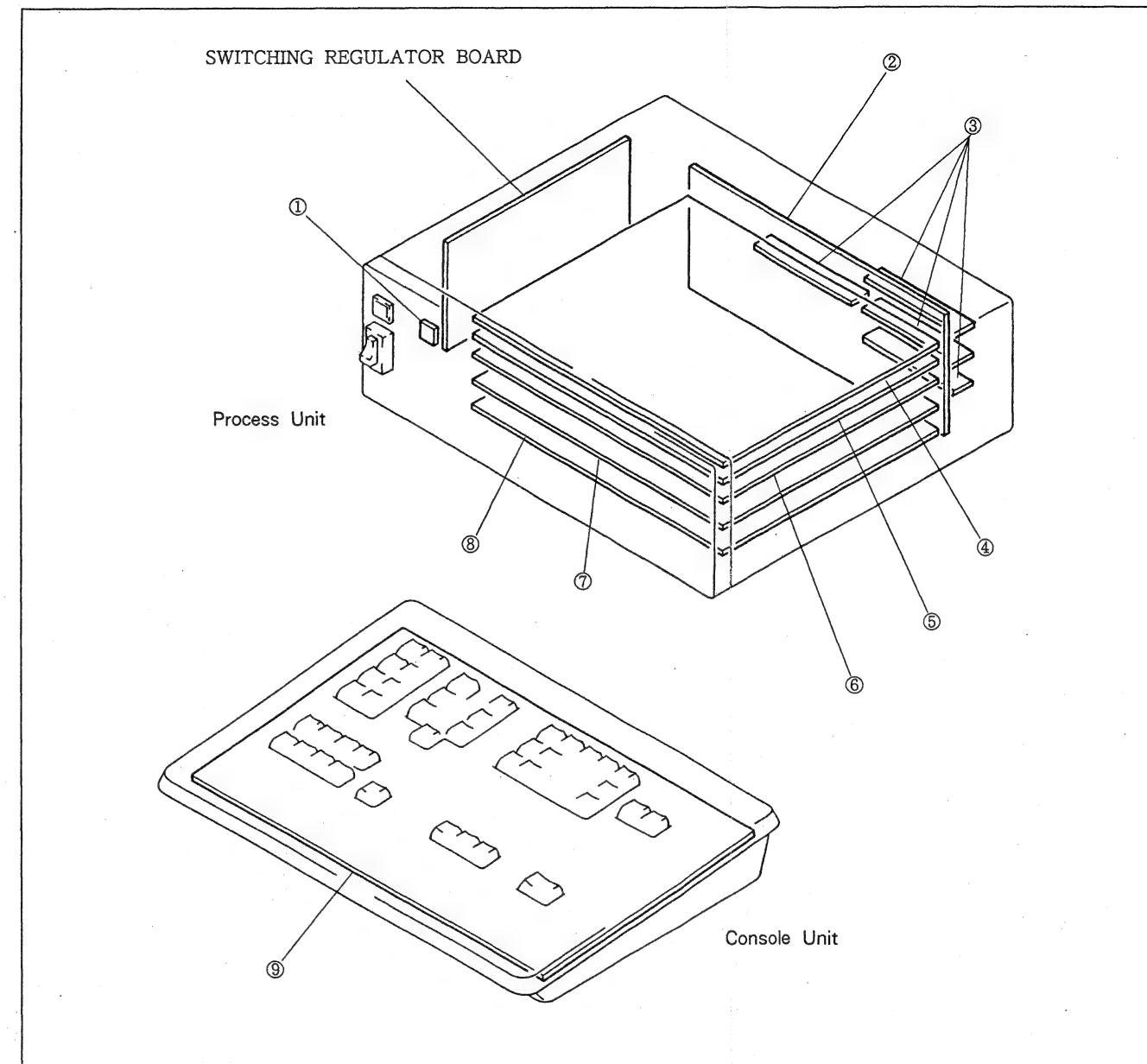
AL	}	ELECTROLYTIC
AS		
TA	}	TANTALUM
CA	}	CERAMIC
CC		
CCS		
CM		
CS	}	MYLAR
MPS		
PP		
PS		
PT	}	DIPPED MICA
MD		
MS	}	MICA

RESISTOR (R)

VARIABLE RESISTOR (RV)

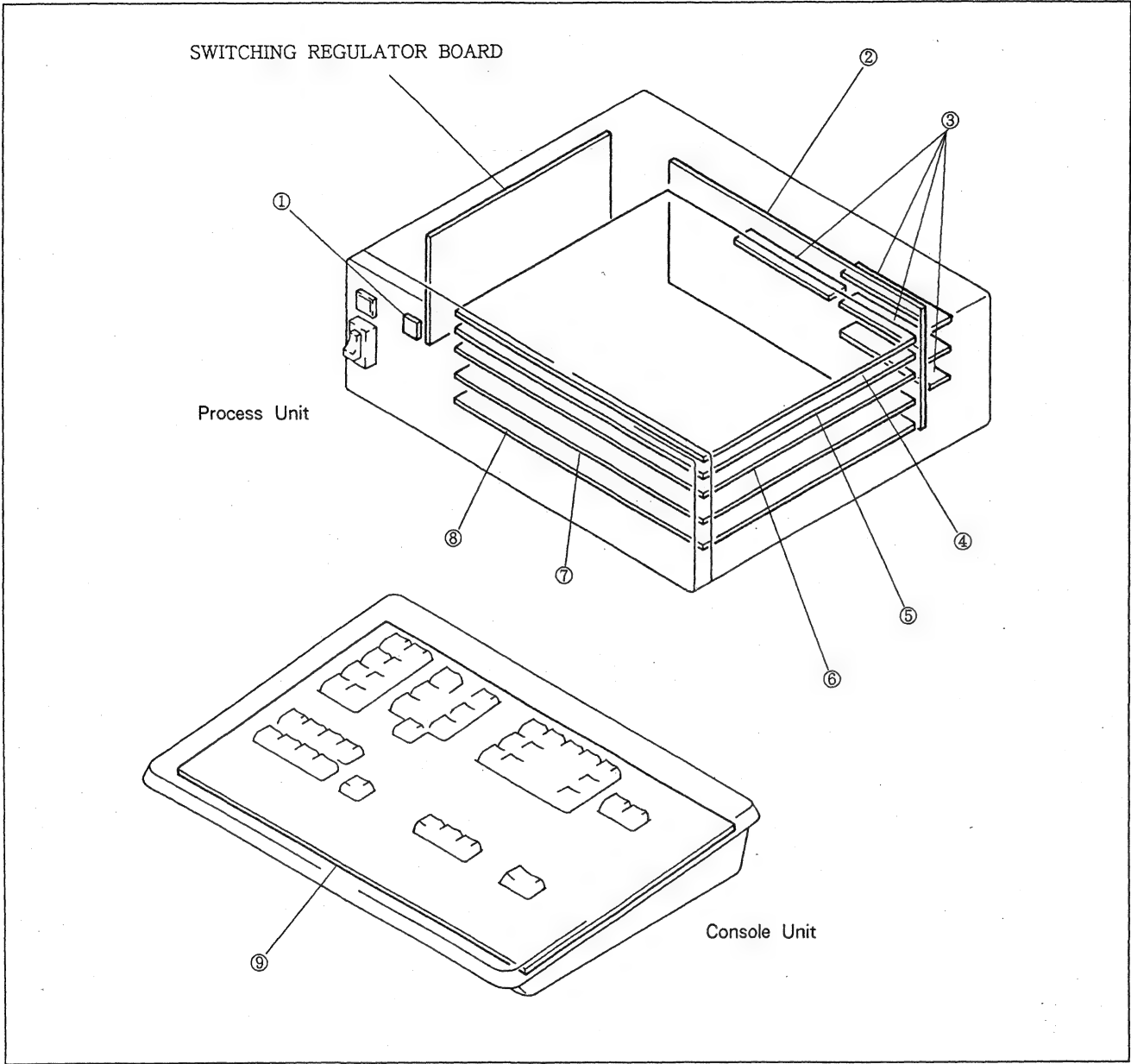
RC	}	CARBON
RD		
RF	}	FUSE
RN	}	METAL
RS		
RW	}	WIREWOUND

LOCATION OF PRINTED CIRCUIT BOARDS



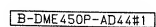
- | | |
|-----------|----------|
| ① LE-55 | ⑥ MY-41P |
| ② MB-249 | ⑦ DA-33P |
| ③ CN-231 | ⑧ AD-44P |
| ④ SY-146P | ⑨ KY-163 |
| ⑤ PU-69 | |

LOCATION OF PRINTED CIRCUIT BOARDS



- | | |
|-----------|----------|
| ① LE-55 | ⑥ MY-41P |
| ② MB-249 | ⑦ DA-33P |
| ③ CN-231 | ⑧ AD-44P |
| ④ SY-146P | ⑨ KY-163 |
| ⑤ PU-69 | |

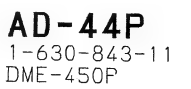
S/N UP TO 11,080



7-5(a)

1

AD-44P (1/2)

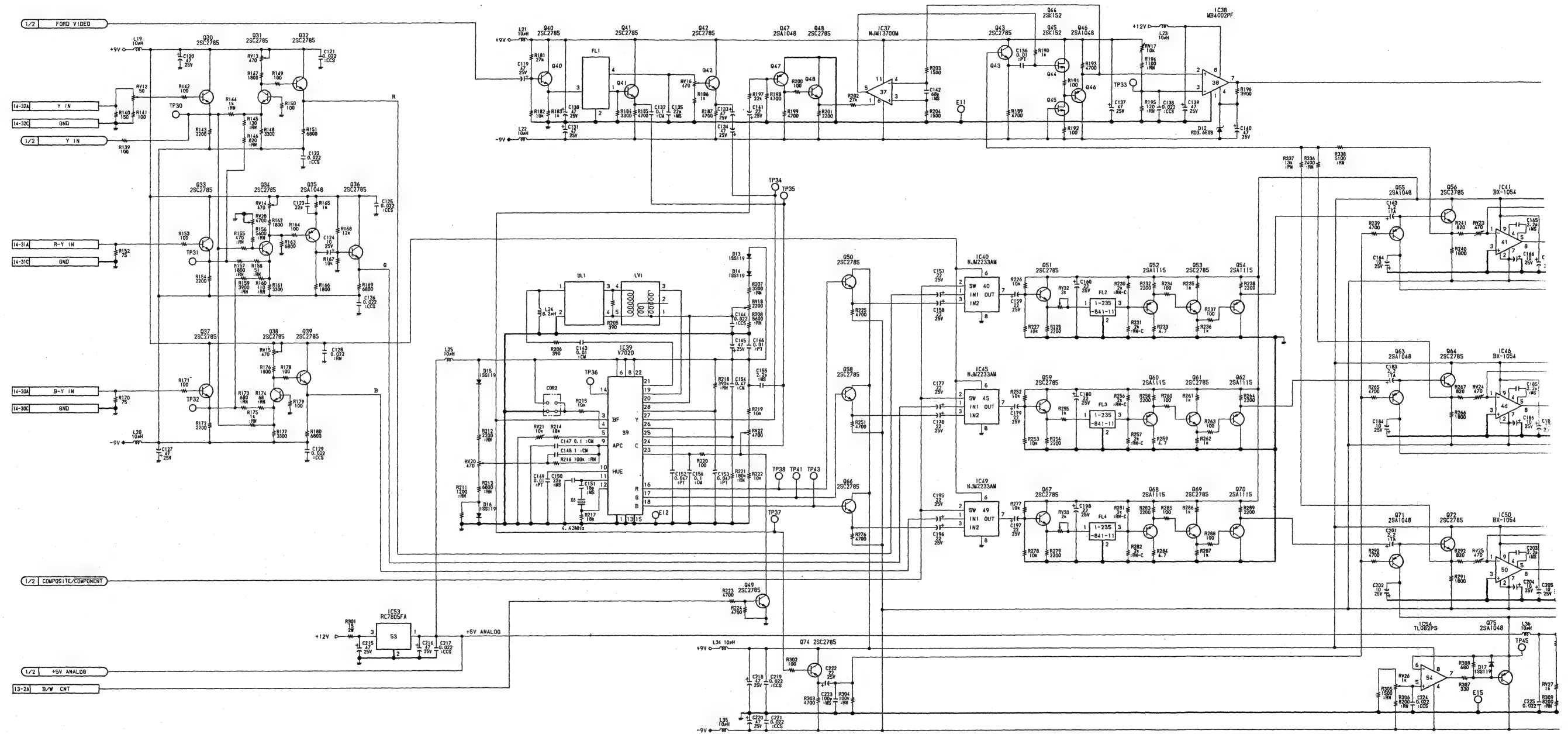


7-6(a)

L

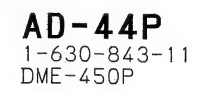
AD-44P A/D CONVERTER

S/N UP TO 11,080



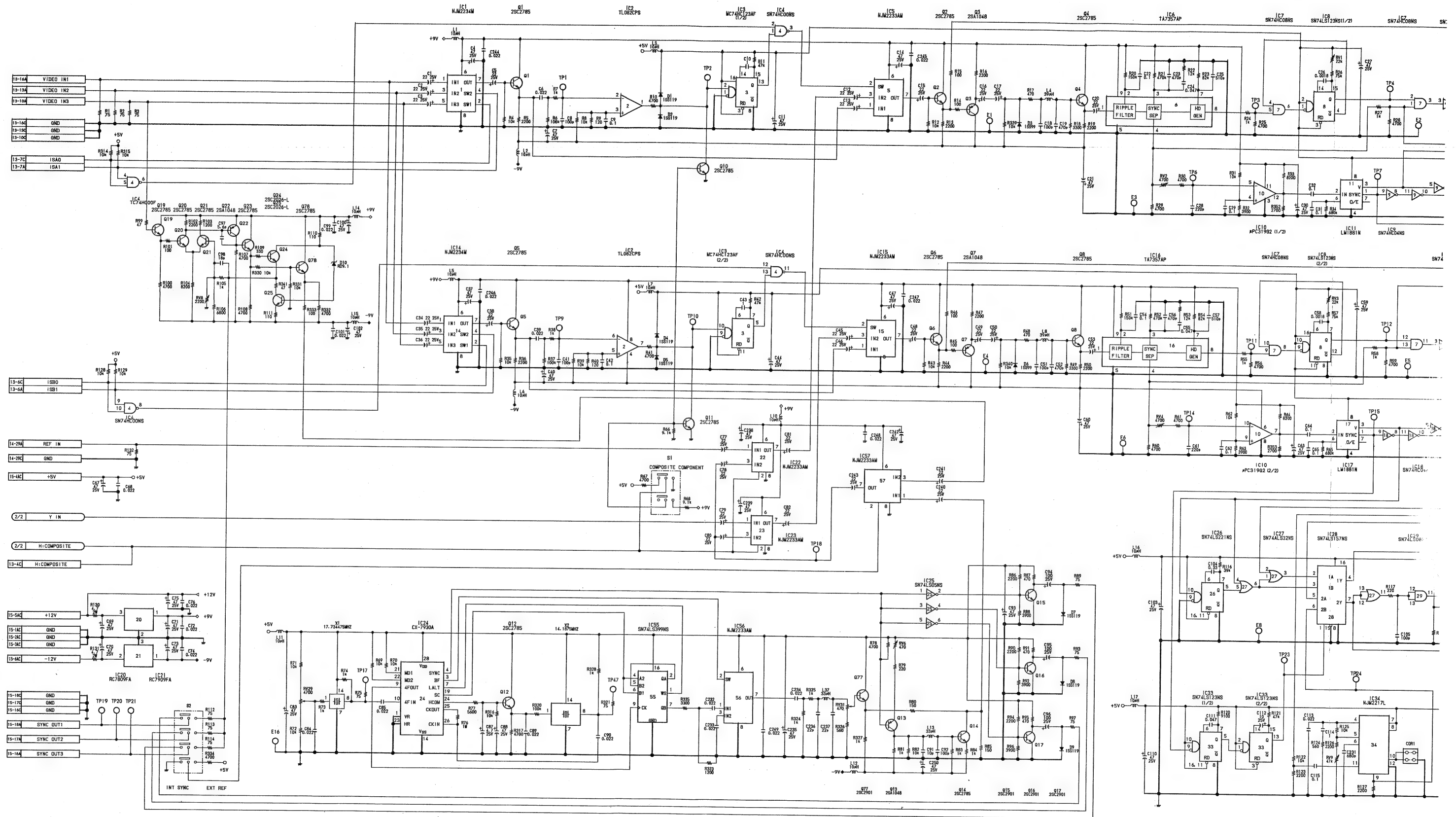
7-10(a)

7-11(a)



AD-44P A/D CONVERTER

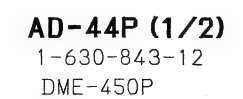
S/N 11,081 AND HIGHER



7-4(b)

7-5(b)

AD-44P (1/2)

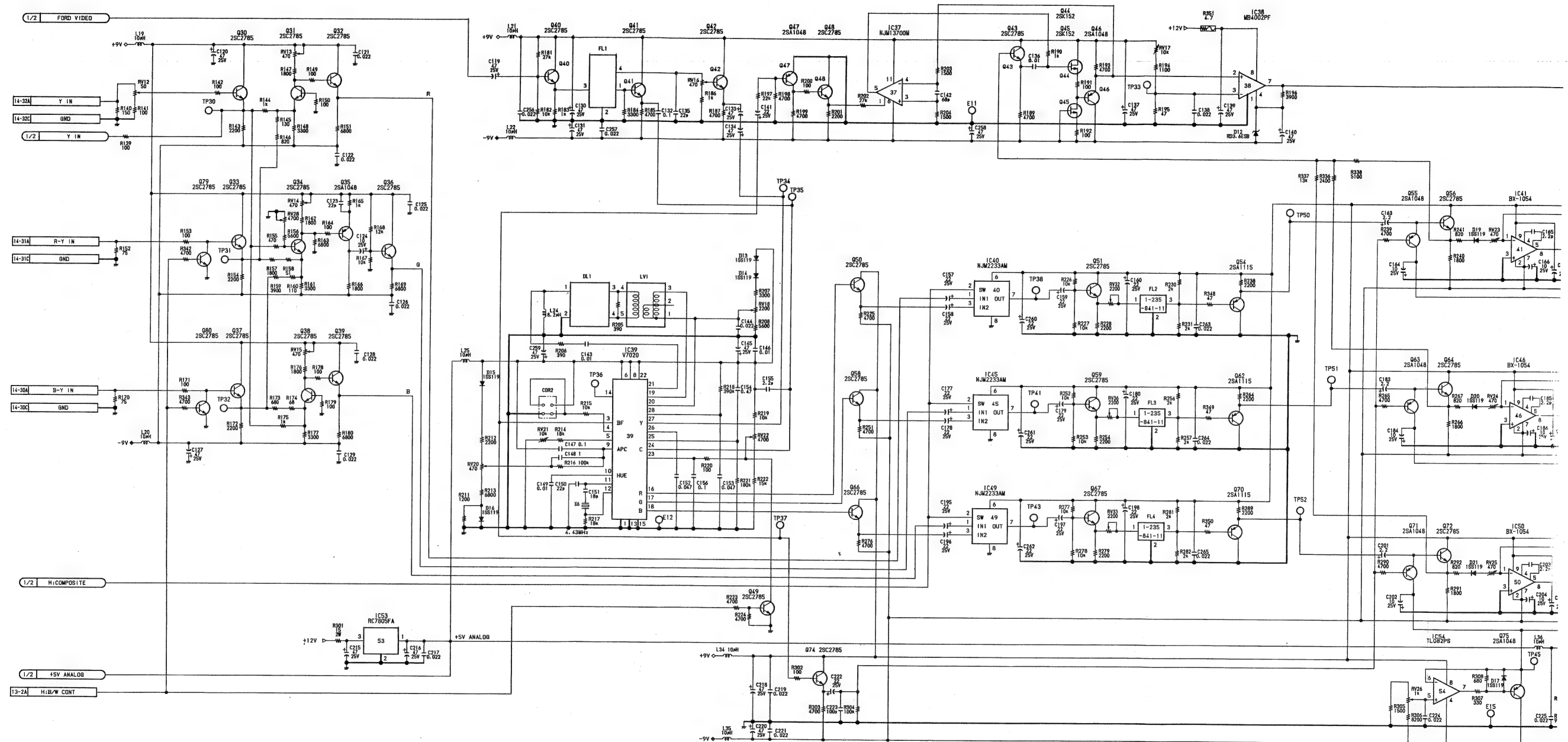


7-6(b)

1

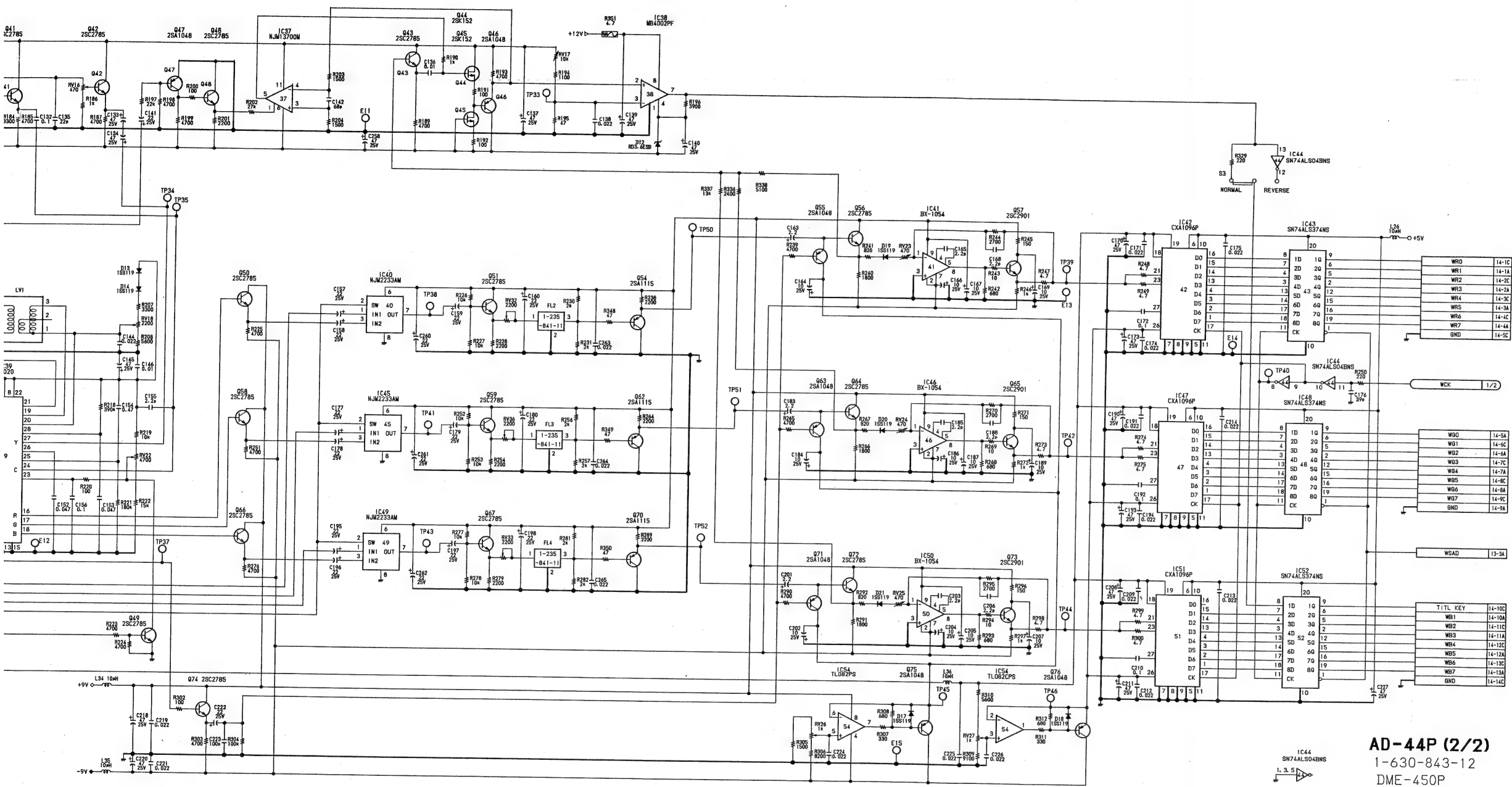
AD-44P A/D CONVERTER

S/N 11,081 AND HIGHER



7-10(b)

7-11(b)



7-11(b)

7-12(b)

E

F

G

H

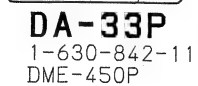
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J

K

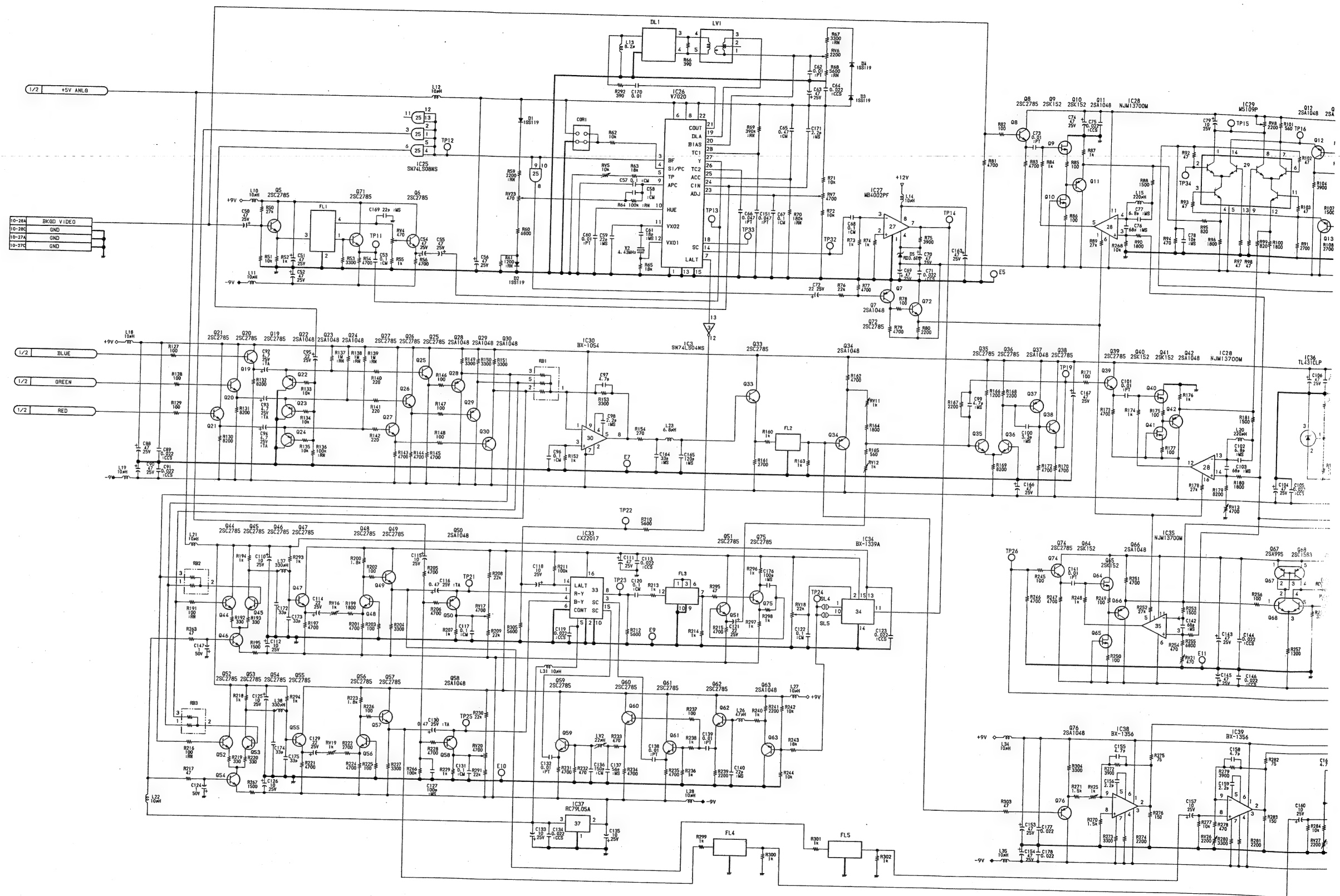
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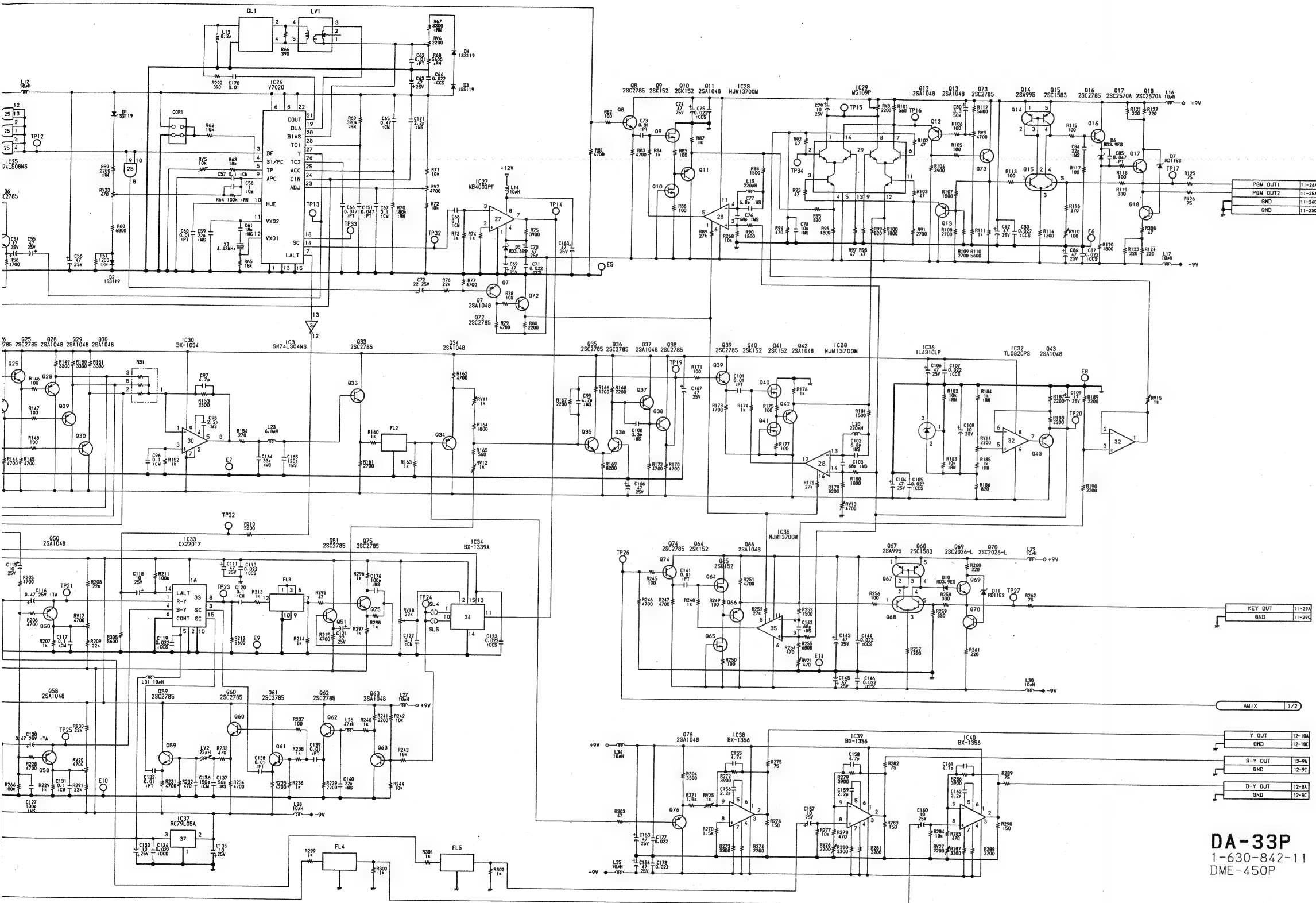
S/N UP TO 11,080



DA-33P D/A CONVERTER

S/N UP TO 11,080





7-21(a)

7-22(a)

E

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H

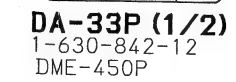
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J

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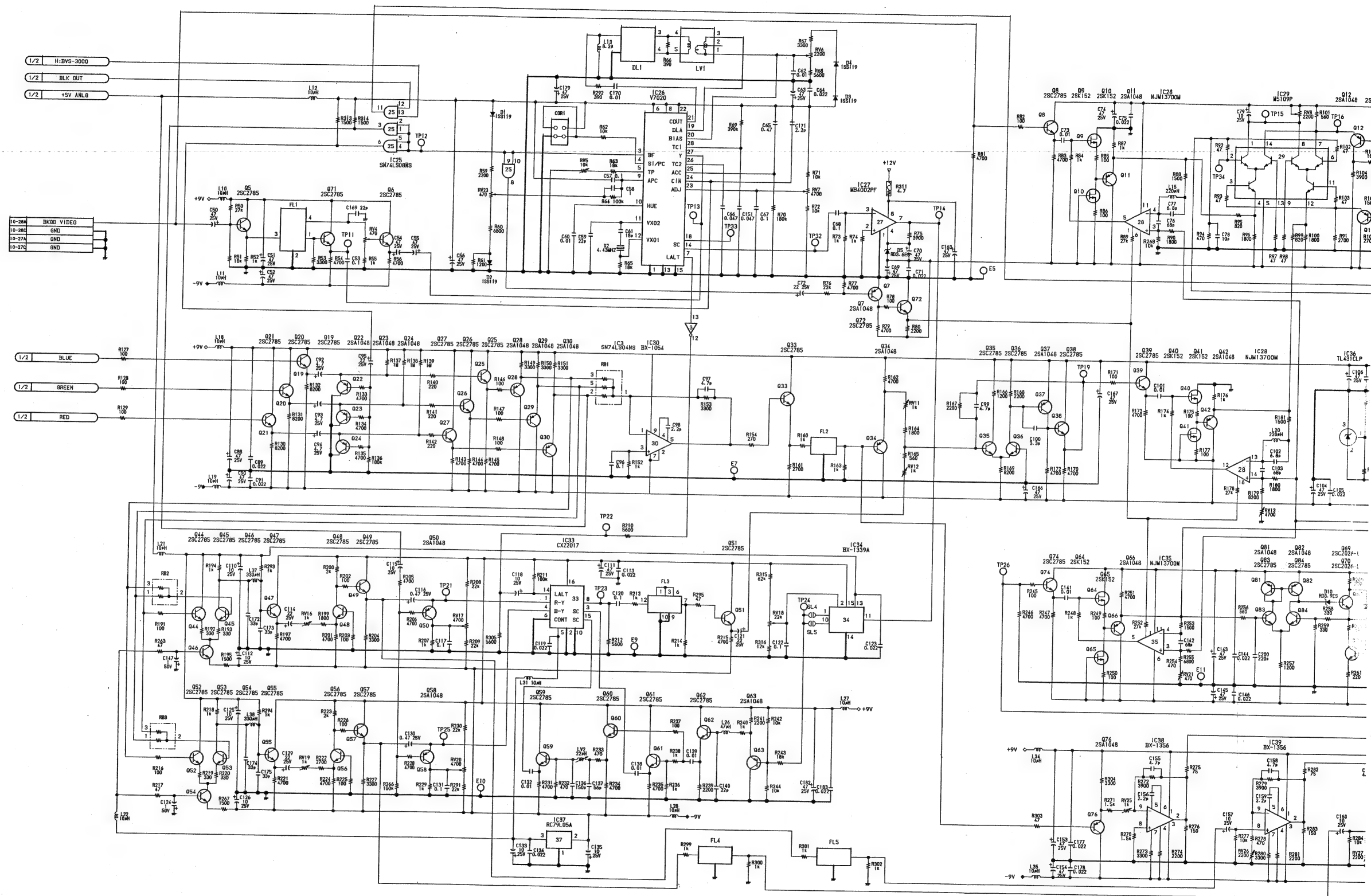
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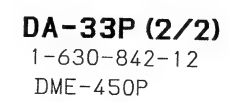
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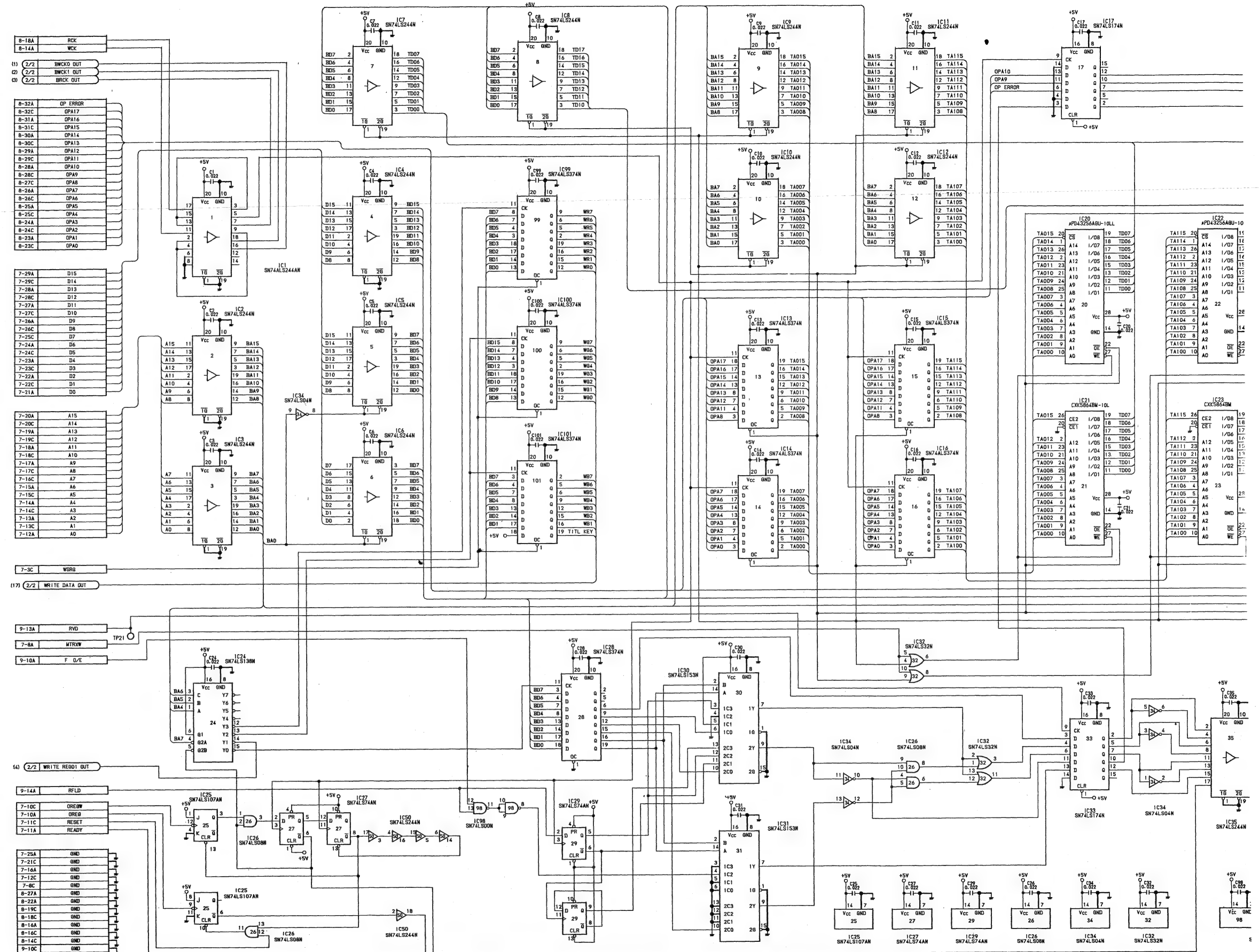
DA-33P D/A CONVERTER

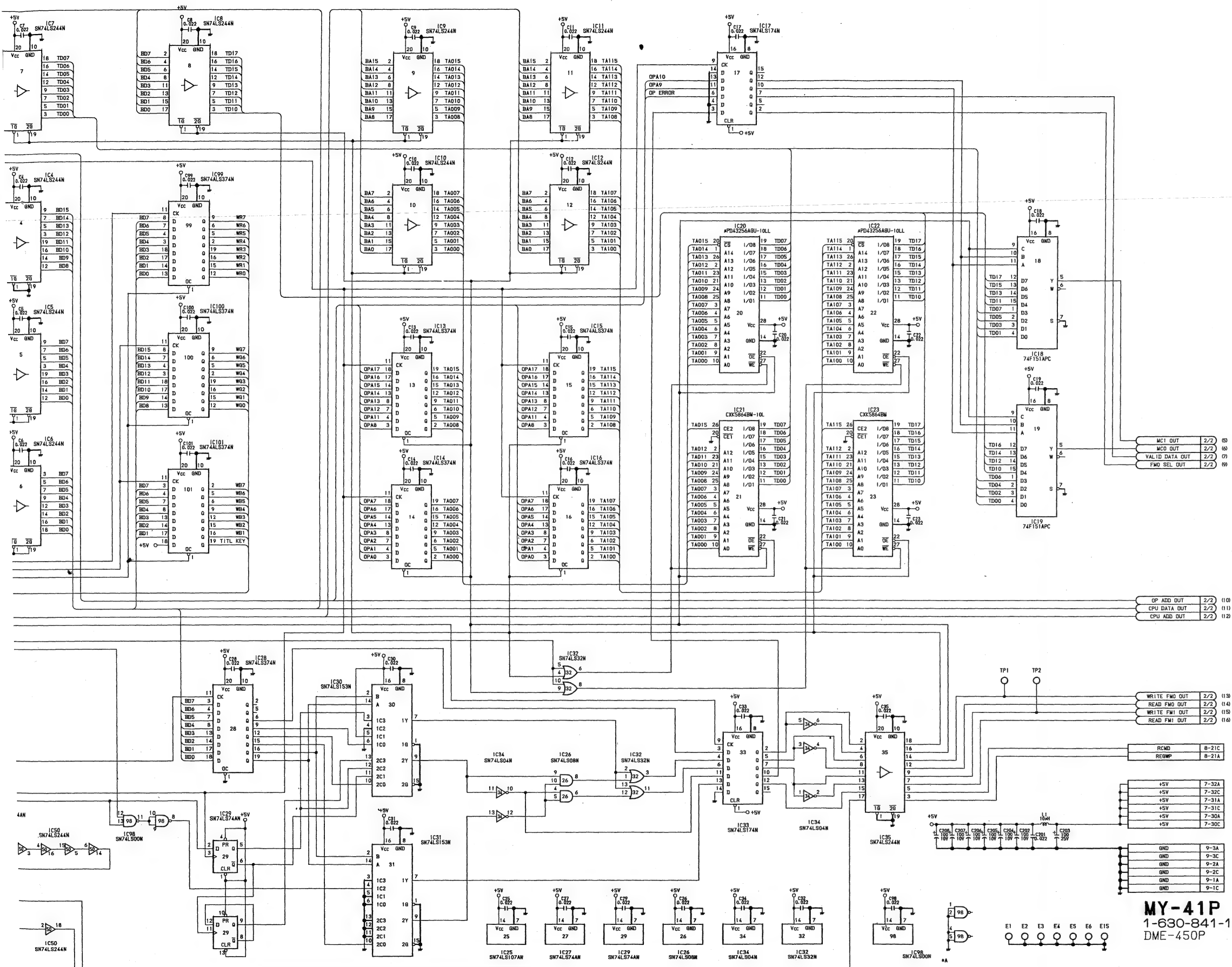
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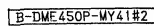


MY-41P MEMORY BOARD





MY-41P (2/2)



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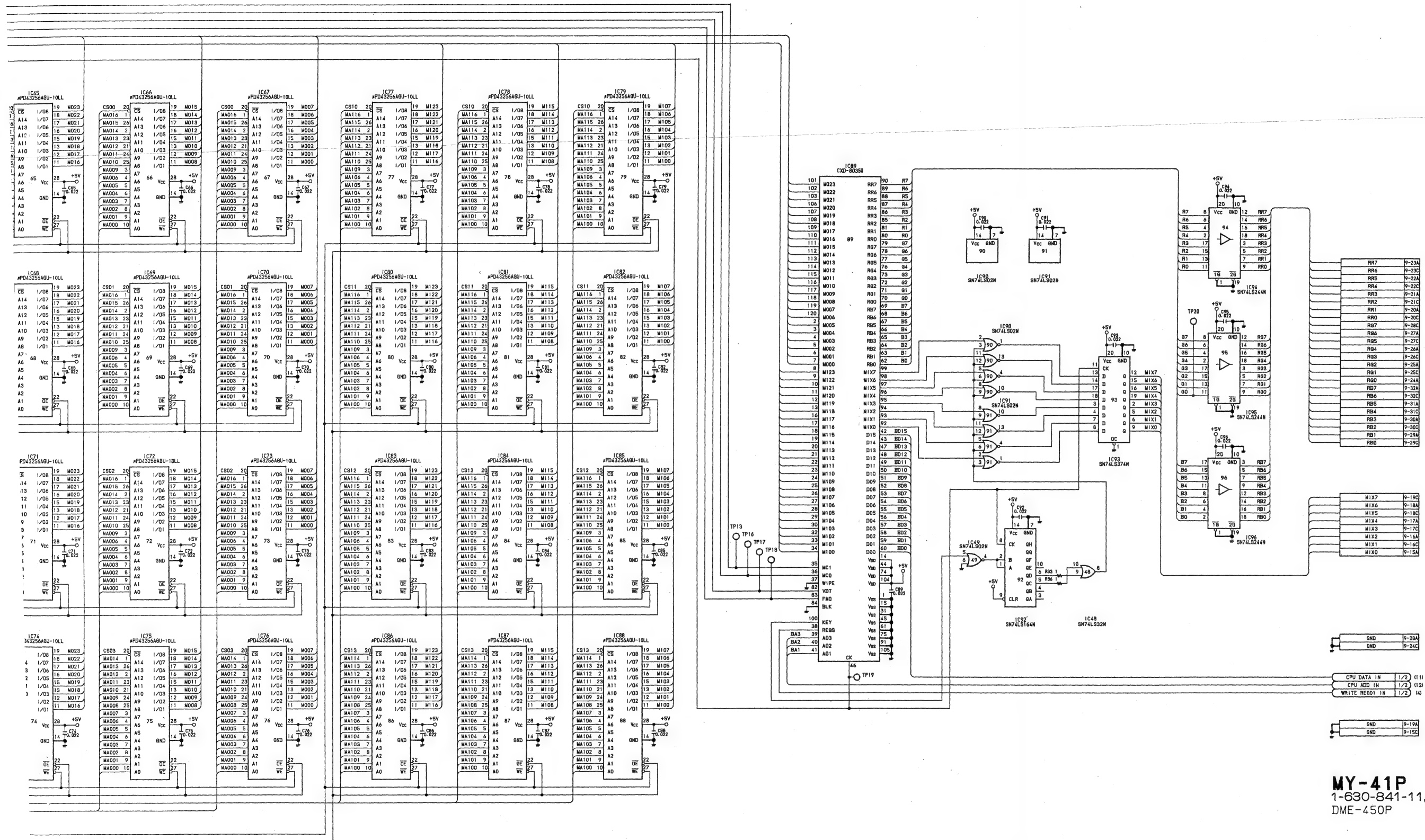
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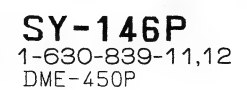
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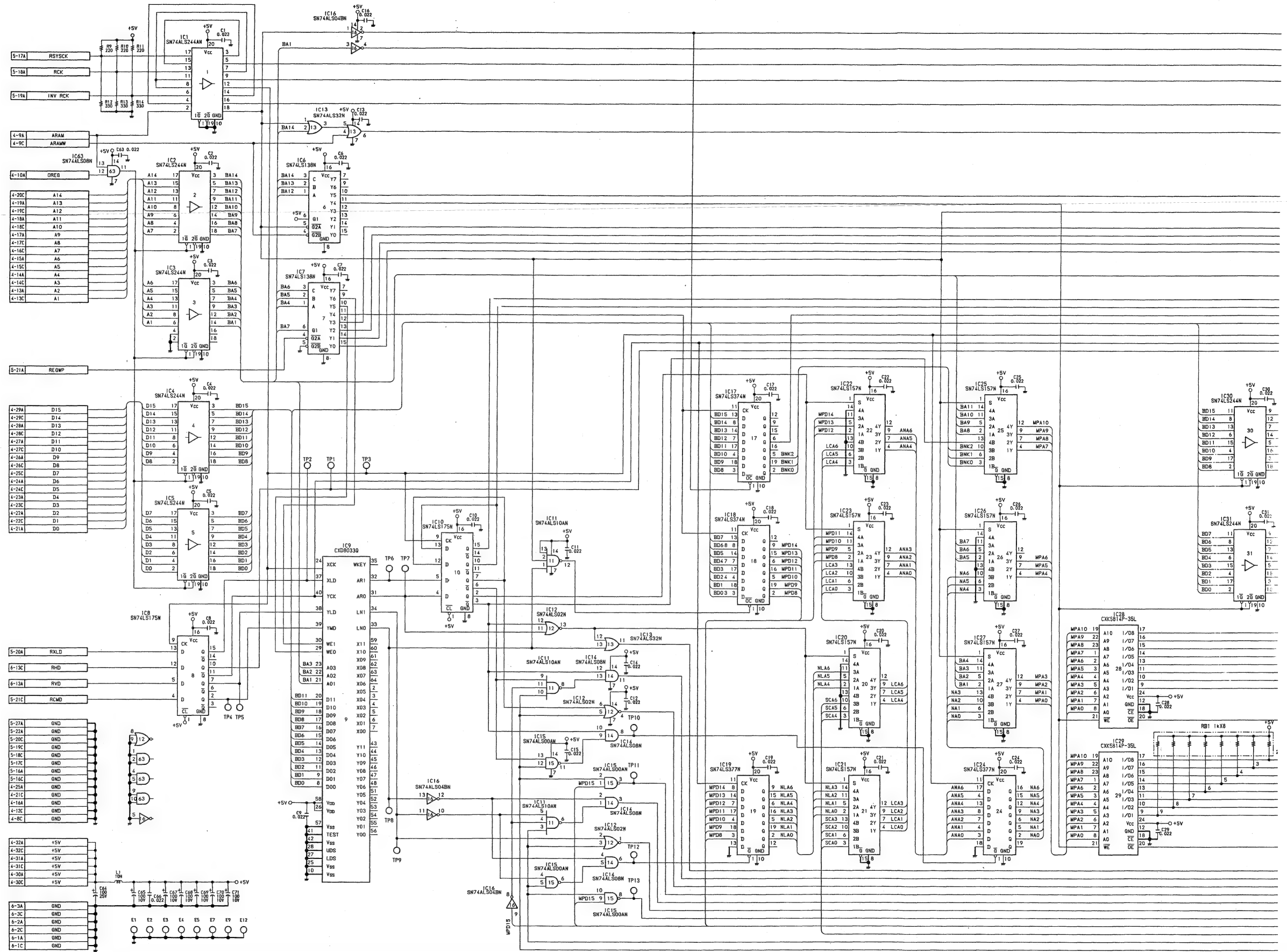
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MY-41P
1-630-841-11,12,13
DME-450P



PU-69 (1/2) PROCESS BOARD

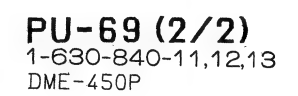


PU-69 (1/2)



3

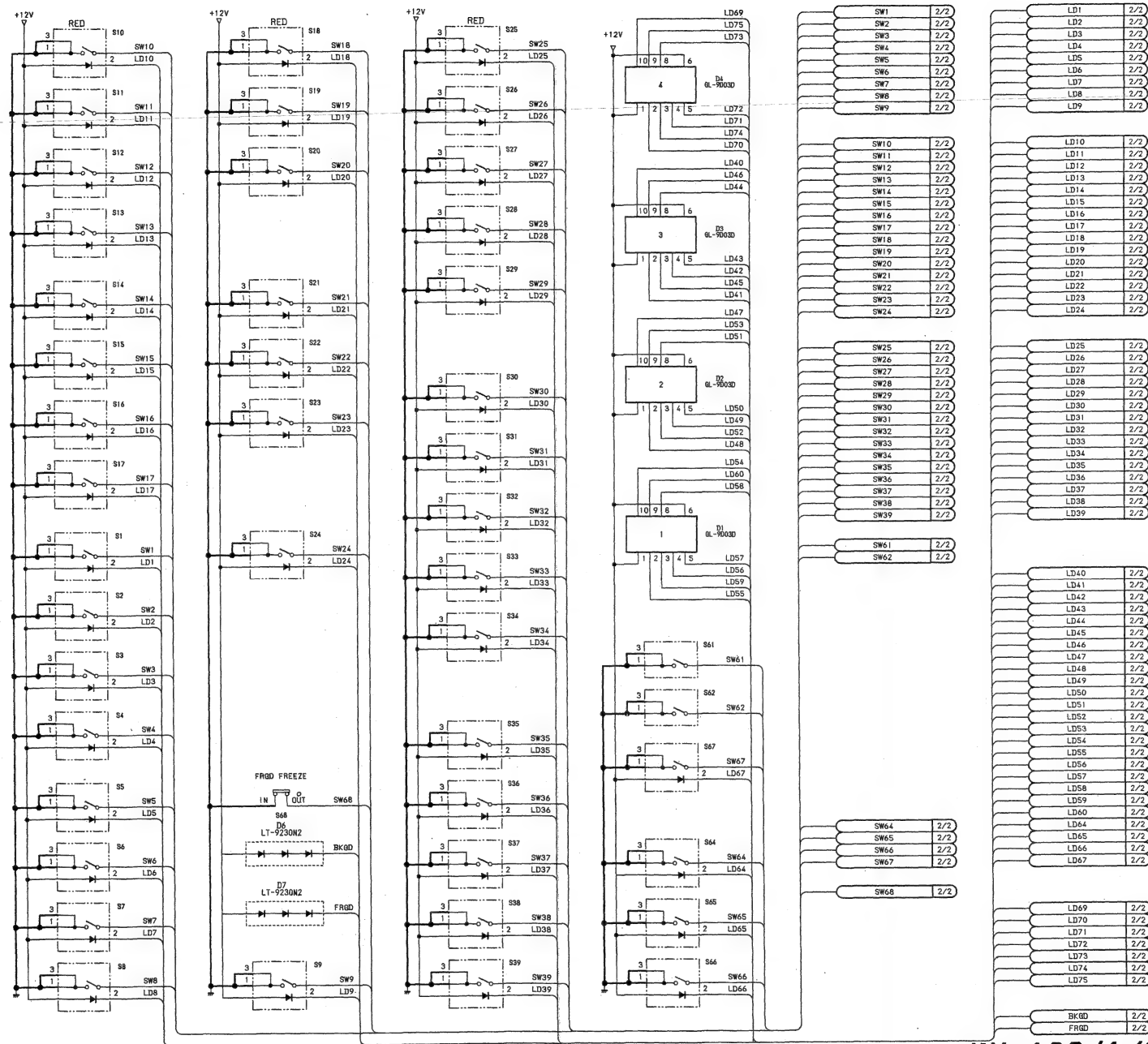




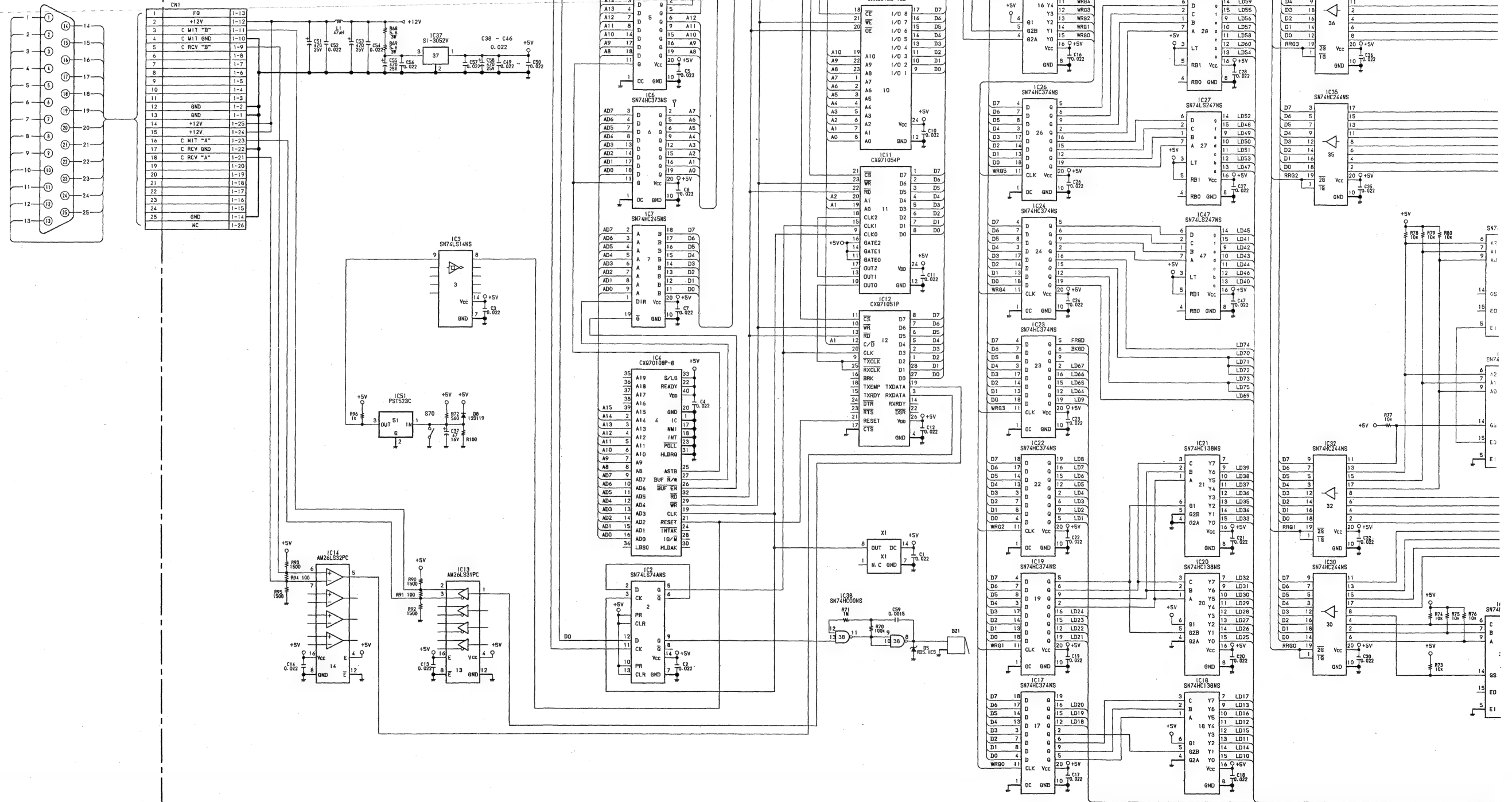
KY-163 (1/2)

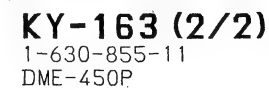
KY-163 (1/2)

KY-163 (1/2) FUNCTION KEYBOARD

KY-163 (1/2)
1-630-855-11
DME-450P

KY-163 (2/2) FUNCTION KEYBOARD



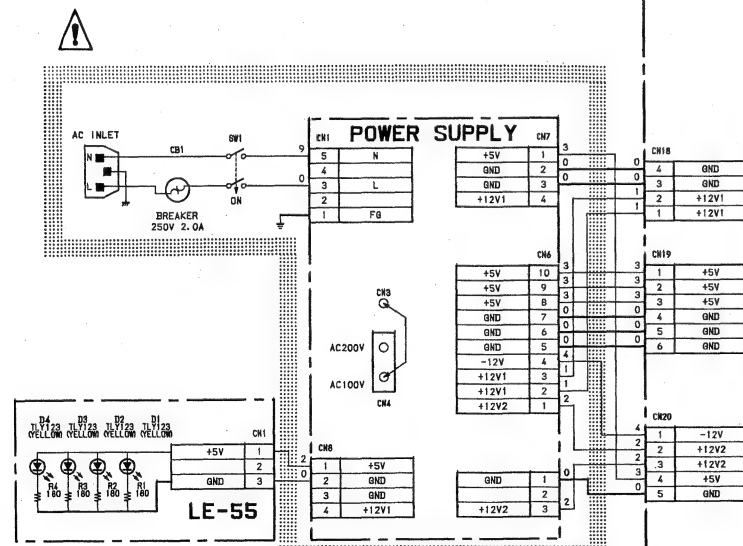


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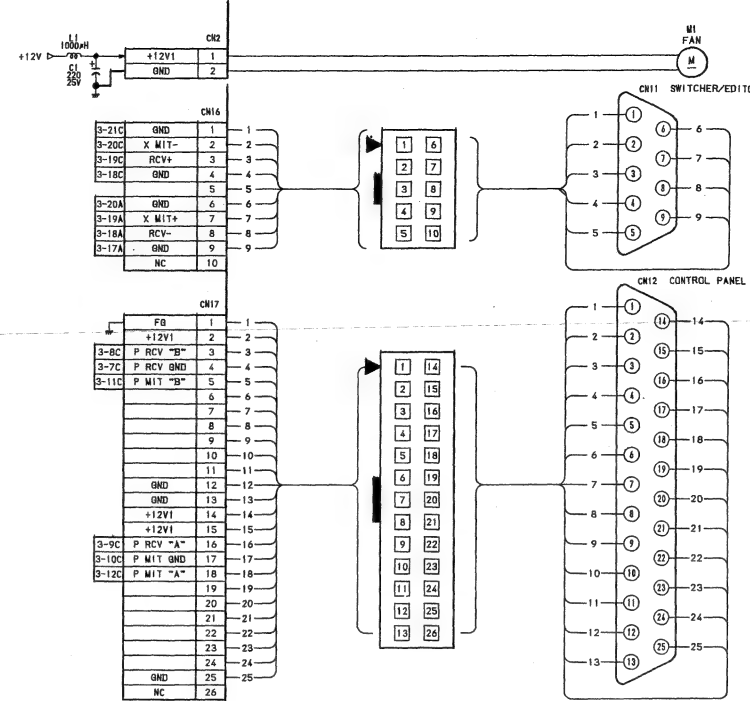
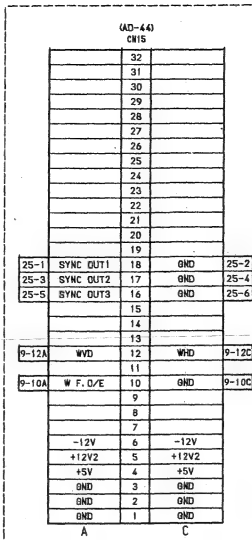
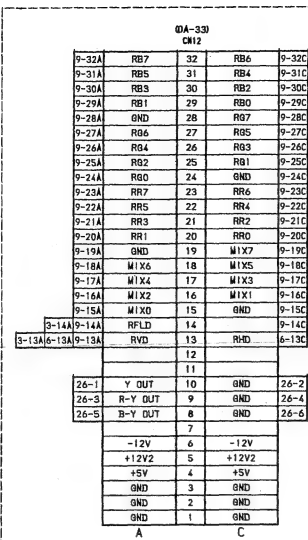
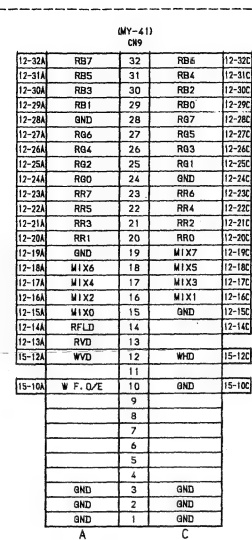
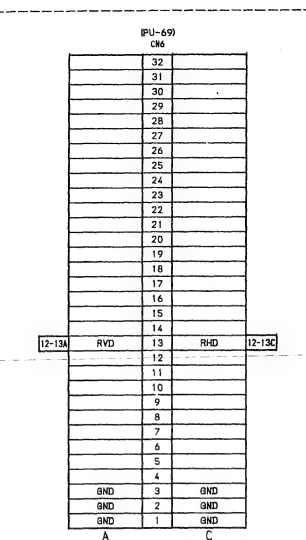
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FRAME

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SECTION 8
PRINTED WIRING DIAGRAMS

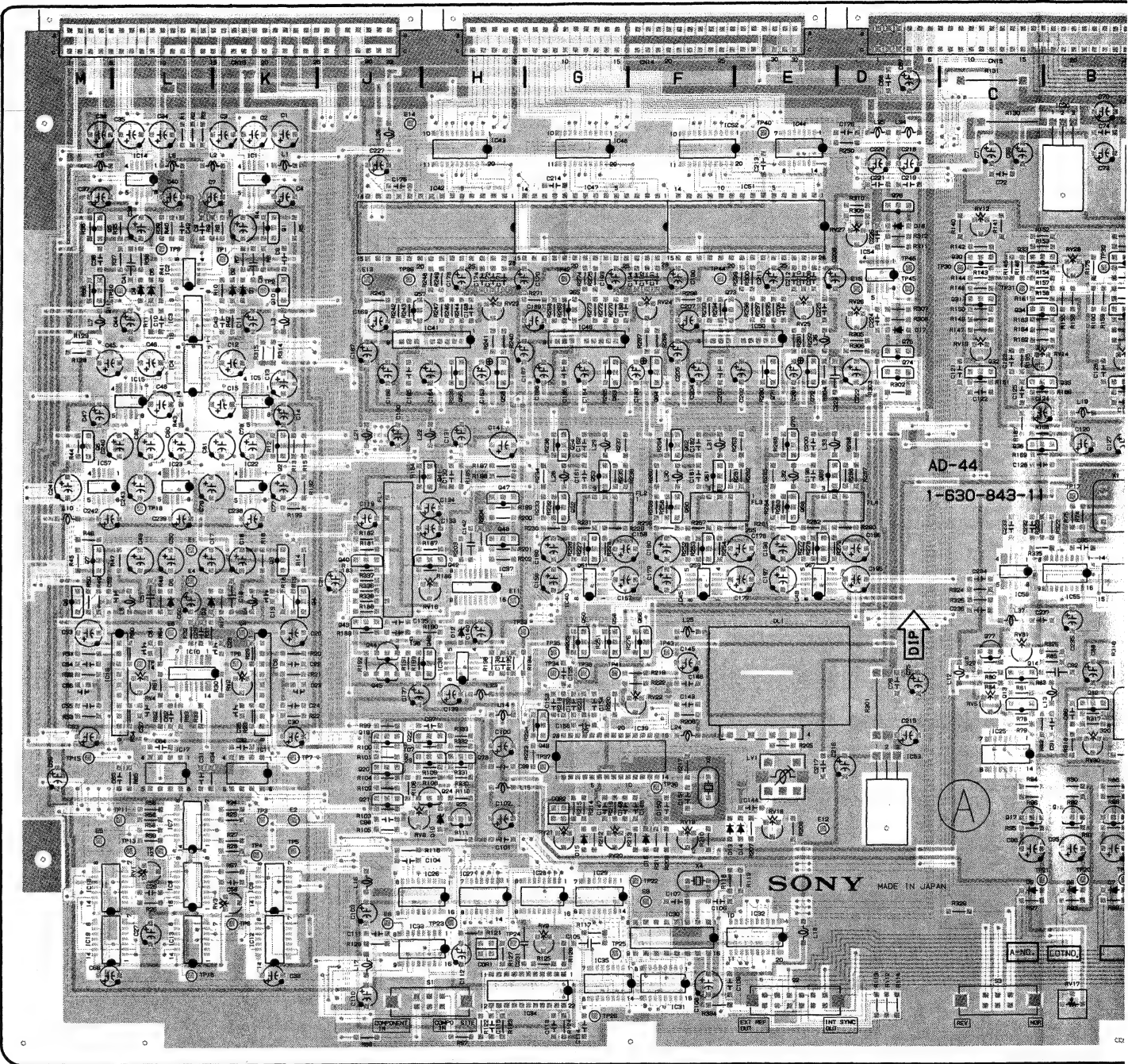
AD-44P (1-630-843-11)

CN13	K-1	IC31	F-10	Q44	J-7	S2	E-10
CN14	F-1	IC32	E-9	Q45	J-7	S3	C-10
CN15	C-1	IC33	H-10	Q46	H-7	TP1	K-3
D1	K-3	IC34	G-10	Q47	H-5	TP2	K-3
D2	K-3	IC35	G-10	Q48	H-6	TP3	K-8
D3	K-6	IC37	H-6	Q49	G-7	TP4	K-9
D4	L-3	IC38	H-7	Q50	G-7	TP5	K-9
D5	L-3	IC39	G-8	Q51	G-6	TP6	K-7
D6	L-6	IC40	G-6	Q52	G-5	TP7	K-8
D7	B-9	IC41	H-4	Q53	G-5	TP8	K-9
D8	B-9	IC42	H-3	Q54	G-5	TP9	L-3
D9	C-9	IC43	H-2	Q55	H-4	TP10	L-3
D10	H-8	IC44	E-2	Q56	H-4	TP11	L-8
D12	H-7	IC45	F-6	Q57	H-3	TP12	L-9
D15	G-9	IC46	G-4	Q58	G-7	TP13	L-9
D16	F-9	IC47	G-3	Q59	F-6	TP14	L-7
D17	D-4	IC48	G-2	Q60	F-5	TP15	M-8
D18	D-3	IC49	E-6	Q61	F-5	TP18	L-5
E1	L-6	IC50	E-4	Q62	F-5	TP19	B-9
E2	K-8	IC51	E-3	Q63	G-4	TP20	B-9
E3	K-7	IC52	F-2	Q64	F-4	TP21	C-9
E4	L-6	IC53	D-8	Q65	G-3	TP22	F-9
E5	M-9	IC54	D-3	Q66	F-7	TP23	H-9
E6	L-6	IC56	C-6	Q67	E-6	TP24	H-10
E8	J-9	IC57	M-5	Q68	E-5	TP25	G-10
E9	F-9	Q1	K-3	Q69	E-5	TP26	G-10
E11	H-6	Q2	K-5	Q70	E-5	TP30	C-3
E12	E-8	Q3	K-6	Q71	E-4	TP31	C-3
E13	J-3	Q4	K-6	Q72	E-4	TP32	B-3
E14	J-2	Q5	M-3	Q73	F-3	TP33	G-7
E15	D-3	Q6	M-5	Q74	D-4	TP34	G-7
IC1	K-2	Q7	M-6	Q75	D-4	TP35	G-7
IC2	L-3	Q8	M-6	Q76	D-2	TP36	F-8
IC3	L-3	Q10	K-3	Q77	C-7	TP37	G-8
IC4	L-4	Q11	M-3	Q78	H-8	TP38	G-7
IC5	K-4	Q13	C-7	RV1	L-9	TP39	J-3
IC6	K-7	Q14	C-7	RV2	K-7	TP40	E-2
IC7	L-8	Q15	B-8	RV3	K-9	TP41	G-7
IC8	L-9	Q16	B-8	RV4	L-7	TP42	G-3
IC9	K-9	Q17	C-8	RV6	C-7	TP43	F-7
IC10	L-7	Q19	J-8	RV8	H-8	TP44	F-3
IC11	K-8	Q20	J-8	RV9	G-10	TP45	D-3
IC12	K-10	Q21	J-8	RV12	C-3	TP46	D-3
IC13	L-10	Q22	H-8	RV13	C-4	TP47	A-7
IC14	L-2	Q23	H-8	RV14	C-4		
IC15	L-4	Q24	H-8	RV15	B-4		
IC16	L-7	Q25	H-8	RV16	H-6		
IC17	L-8	Q30	C-3	RV17	B-10		
IC18	M-9	Q31	C-3	RV19	F-9		
IC19	M-10	Q32	C-4	RV20	G-9		
IC20	B-2	Q33	C-3	RV21	G-9		
IC21	A-2	Q34	C-3	RV22	F-7		
IC22	K-5	Q35	C-4	RV23	H-3		
IC23	L-5	Q36	C-5	RV24	F-3		
IC24	B-6	Q37	B-3	RV25	E-3		
IC25	C-8	Q38	B-3	RV26	D-4		
IC26	H-9	Q39	B-4	RV27	D-3		
IC27	H-9	Q40	J-6	RV28	B-3		
IC28	G-9	Q41	H-5	RV30	B-8		
IC29	G-9	Q42	H-6	RV31	C-7		
IC30	F-9	Q43	J-6	S1	H-10		

8-1(a)

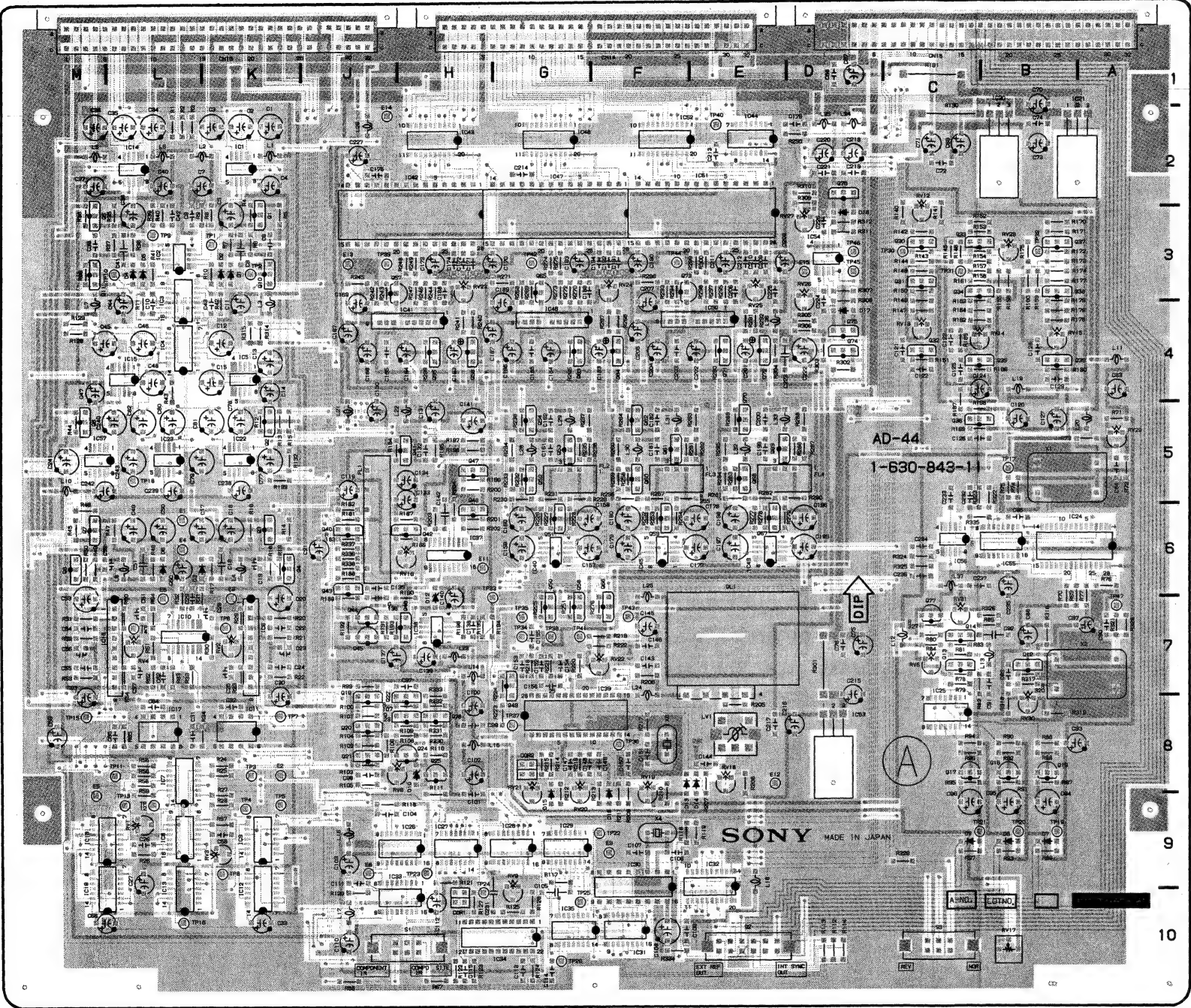
AD-44P; A/D CONVERTER

S/N UP TO 11,080

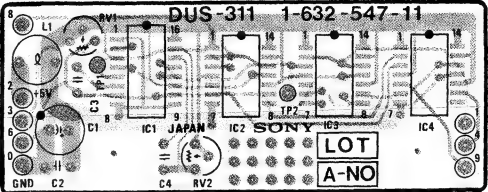


8-2(a)

AD-44P; A/D CONVERTER S/N UP TO 11,080



AD-44P —COMPONENT SIDE—
1-630-843-11
DME-450P



DUS-311 —COMPONENT SIDE—
1-632-547-11
DME-450P

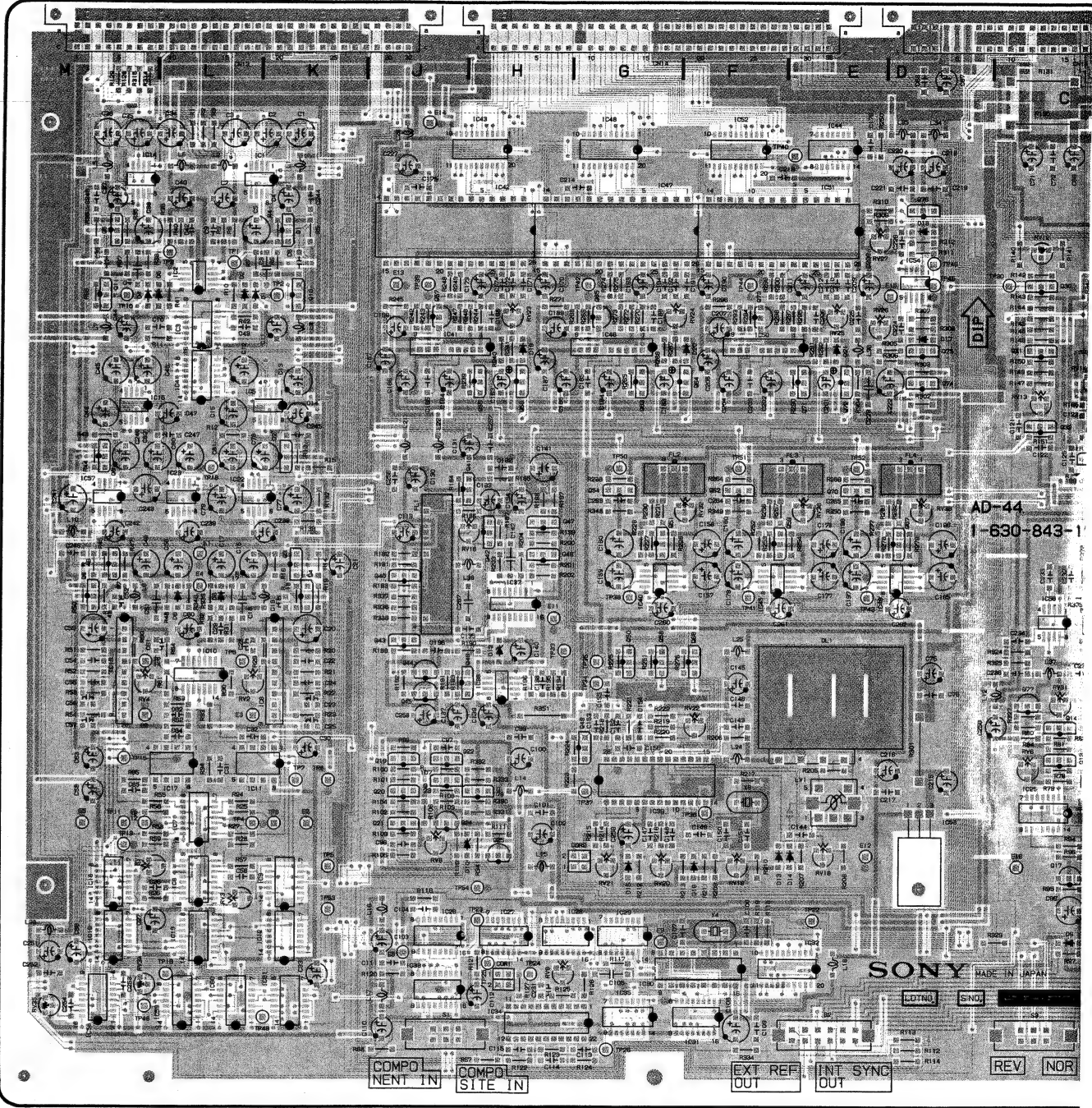
AD-44P (1-630-843-12)

CN13	L-1	IC27	H-9	Q36	B-5	RV28	B-4
CN14	G-1	IC28	G-9	Q37	A-3	RV30	B-8
CN15	C-1	IC29	G-9	Q38	A-4	RV31	C-7
D1	K-3	IC30	G-10	Q39	A4	RV32	F-5
D2	L-3	IC31	F-10	Q40	J-6	RV33	D-5
D3	L-6	IC32	E-9	Q41	H-5	RV34	M-10
D4	M-3	IC33	H-10	Q42	H-6	RV35	M-10
D5	L-3	IC34	J-10	Q43	J-6	RV36	E-5
D6	L-6	IC35	H-10	Q44	J-7	S1	J-10
D7	B-9	IC37	H-6	Q45	J-7	S2	E-10
D8	B-9	IC38	H-7	Q46	H-7	S3	C-10
D9	C-9	IC39	G-8	Q47	H-5	TP1	L-3
D10	H-9	IC40	G-6	Q48	H-6	TP2	K-3
D12	H-7	IC41	H-2	Q49	G-7	TP3	K-8
D15	G-9	IC42	H-3	Q50	G-6	TP4	L-8
D16	F-9	IC43	H-2	Q51	G-5	TP5	K-9
D17	D-4	IC44	E-2	Q54	G-5	TP6	L-7
D18	D-3	IC45	F-6	Q55	H-4	TP7	K-8
D19	H-4	IC46	G-4	Q56	H-4	TP8	K-8
D20	F-4	IC47	G-2	Q57	J-3	TP9	L-3
D21	E-4	IC48	G-2	Q58	G-6	TP10	M-3
E1	L-6	IC49	E-6	Q59	E-6	TP11	M-8
E2	K-8	IC50	F-4	Q62	F-5	TP12	M-8
E3	L-7	IC51	E-2	Q63	G-4	TP13	M-8
E4	L-6	IC52	F-2	Q64	F-4	TP14	L-7
E5	M-8	IC53	D-8	Q65	G-3	TP15	M-8
E6	M-7	IC54	D-3	Q66	F-6	TP16	L-10
E8	J-9	IC56	C-6	Q67	D-5	TP18	L-5
E9	G-9	IC57	M-5	Q70	E-5	TP19	A-9
E11	H-6	IC58	M-10	Q71	E-4	TP20	A-9
E12	E-8	IC59	L-10	Q72	E-4	TP21	A-9
E13	J-3	IC60	L-10	Q73	F-3	TP22	E-9
E14	J-2	IC61	K-10	Q74	D-4	TP23	H-9
E15	D-3	Q1	K-3	Q75	D-4	TP24	H-10
E16	C-9	Q2	K-5	Q76	D-2	TP25	H-10
IC1	L-2	Q3	K-6	Q77	C-7	TP26	G-10
IC2	L-3	Q4	K-6	Q78	H-8	TP30	C-3
IC3	L-4	Q5	M-3	Q79	B-3	TP31	B-3
IC4	L-4	Q6	M-5	Q80	B-3	TP32	B-3
IC5	L-4	Q7	M-6	RV1	M-9	TP33	H-7
IC6	K-7	Q8	M-6	RV2	L-7	TP34	G-7
IC7	L-8	Q10	K-3	RV3	L-9	TP35	G-7
IC8	L-9	Q11	M-3	RV4	M-7	TP36	F-8
IC9	K-9	Q13	C-8	RV6	C-8	TP37	G-8
IC10	L-7	Q14	C-7	RV8	J-9	TP38	G-6
IC11	K-8	Q15	B-8	RV9	H-10	TP39	J-3
IC12	K-9	Q16	B-8	RV12	C-3	TP40	F-2
IC13	L-9	Q17	C-8	RV13	C-4	TP41	F-6
IC14	M-2	Q19	J-8	RV14	C-4	TP42	G-3
IC15	L-4	Q20	J-8	RV15	B-4	TP43	E-6
IC16	M-7	Q21	J-8	RV16	H-6	TP44	F-3
IC17	L-8	Q22	H-8	RV17	B-10	TP45	D-3
IC18	M-9	Q23	J-8	RV19	F-9	TP46	D-3
IC19	M-9	Q24	H-8	RV20	G-9	TP47	A-7
IC20	B-3	Q25	H-8	RV21	G-9	TP48	M-10
IC21	B-3	Q30	C-3	RV22	F-7	TP49	K-10
IC22	L-5	Q31	C-4	RV23	H-3	TP50	G-5
IC23	L-5	Q32	C-4	RV24	F-3	TP51	F-5
IC24	B-6	Q33	B-3	RV25	E-4	TP52	E-5
IC25	C-8	Q34	B-4	RV26	E-3	TP53	K-9
IC26	J-9	Q35	B-4	RV27	E-3	TP54	H-9

8-1(b)

AD-44P; A/D CONVERTER

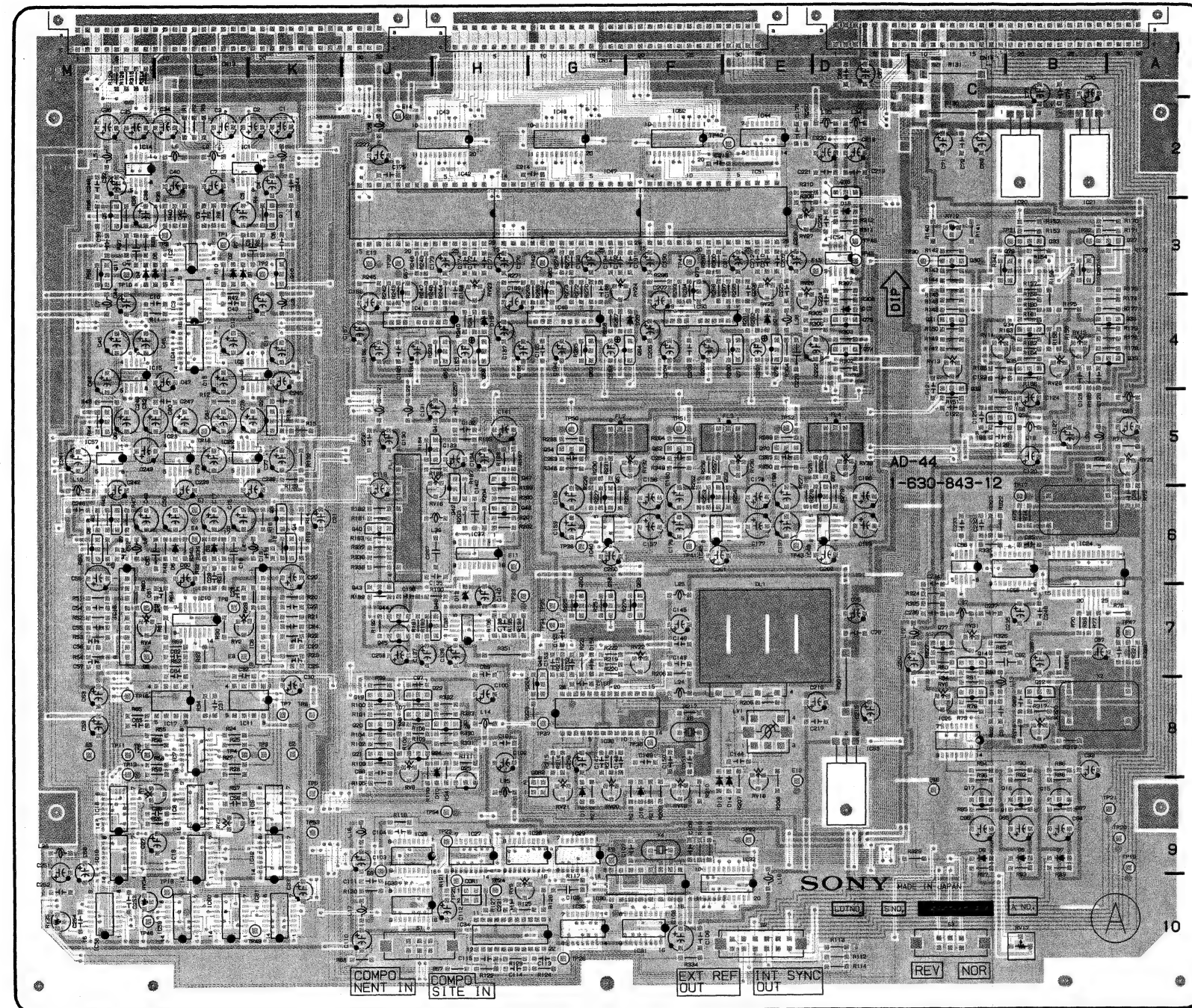
S/N 11,081 AND HIGHER



8-2(b)

AD-44P; A/D CONVERTER

S/N 11,081 AND HIGHER



AD-44P —COMPONENT SIDE—
1-630-843-12
DME-450P

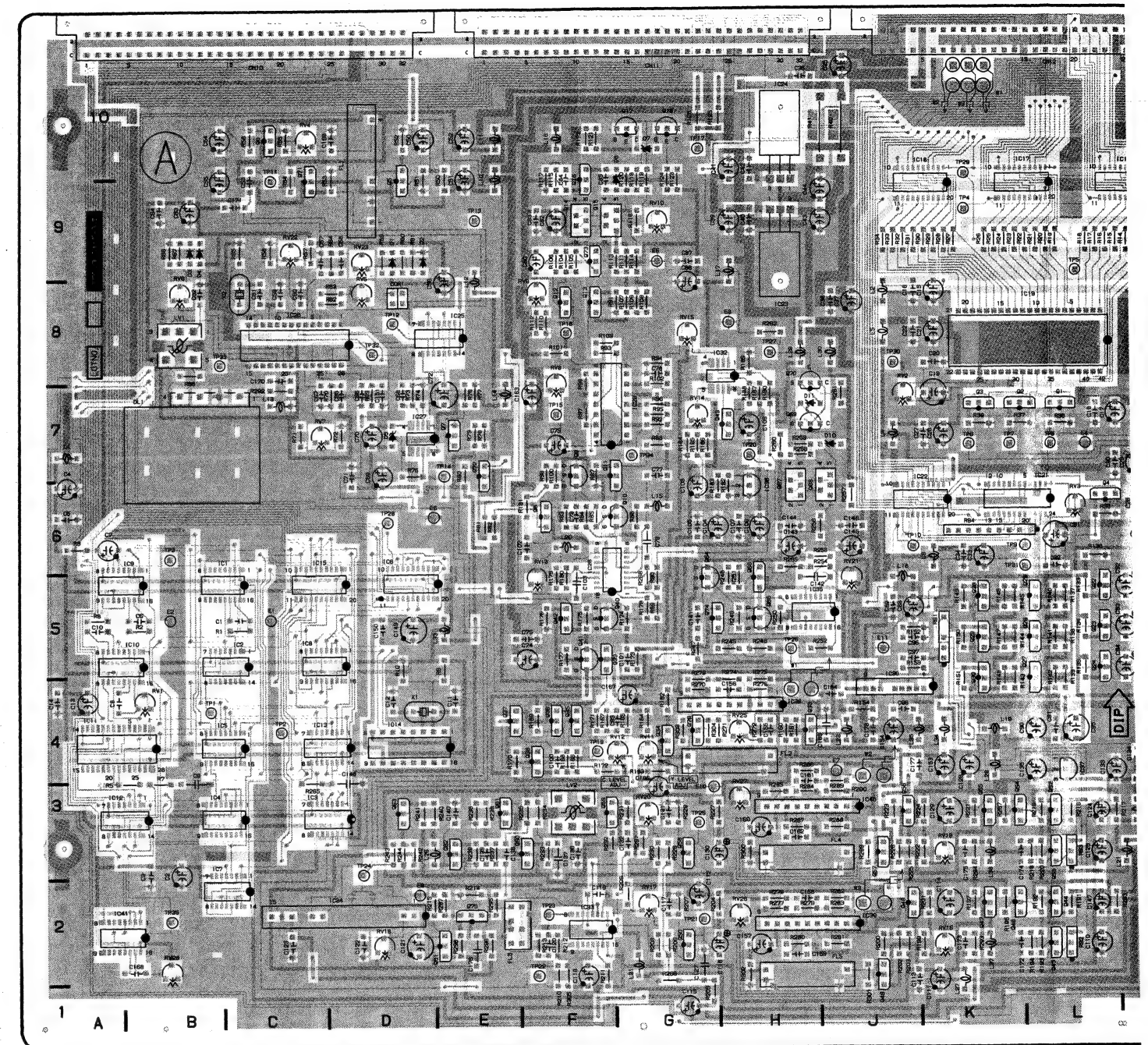
DA-33P (1-630-842-11)

CN10	C-10	LV2	F-3	Q63	D-3	TP19	F-4
CN11	G-10	Q1	L-7	Q64	G-5	TP20	H-7
CN12	L-10	Q2	K-7	Q65	H-5	TP21	G-2
D1	D-9	Q3	K-7	Q66	H-5	TP23	F-2
D2	D-9	Q4	L-6	Q67	H-6	TP24	D-3
D5	D-7	Q5	D-9	Q68	J-6	TP25	G-3
D6	G-10	Q6	C-10	Q69	H-7	TP26	H-5
D7	G-10	Q7	E-7	Q70	H-8	TP27	H-8
D10	J-7	Q8	F-6	Q71	C-10	TP28	D-6
D11	H-7	Q9	F-7	Q72	E-7	TP29	K-10
E1	C-5	Q10	G-6	Q73	F-9	TP30	J-8
E2	B-5	Q11	F-7	Q74	G-5	TP31	K-6
E3	M-6	Q12	F-8	Q75	E-2	TP32	D-8
E4	L-7	Q13	F-8	Q76	G-4	TP33	B-8
E5	D-6	Q14	F-9	RB1	K-5	TP34	G-7
E6	G-9	Q15	F-9	RB2	L-2	TP35	B-2
E7	J-4	Q16	F-9	RB3	L-3		
E8	H-8	Q17	G-10	RB4	K-6		
E9	D-2	Q18	G-10	RV1	B-4		
E10	G-3	Q19	M-5	RV2	J-7		
E11	J-5	Q20	M-5	RV3	L-6		
IC1	D-5	Q21	M-4	RV4	C-10		
IC2	C-5	Q22	L-5	RV5	D-8		
IC3	C-3	Q23	L-5	RV7	C-7		
IC4	B-3	Q24	L-5	RV8	F-8		
IC5	B-4	Q25	L-5	RV9	F-8		
IC6	D-5	Q26	L-5	RV10	G-9		
IC7	B-2	Q27	L-5	RV11	G-4		
IC8	C-5	Q28	K-5	RV12	G-4		
IC9	A-5	Q29	K-5	RV13	F-5		
IC10	A-5	Q30	K-5	RV14	G-7		
IC11	A-4	Q33	H-4	RV15	G-8		
IC12	A-3	Q34	G-4	RV16	K-2		
IC13	C-4	Q35	F-4	RV17	G-2		
IC14	D-4	Q36	F-4	RV18	D-2		
IC15	C-5	Q37	E-4	RV19	K-3		
IC16	M-9	Q38	F-4	RV20	G-3		
IC17	L-9	Q39	F-5	RV21	J-5		
IC18	K-9	Q40	F-5	RV22	C-9		
IC19	L-8	Q41	F-5	RV23	D-9		
IC20	M-8	Q42	F-5	RV25	H-4		
IC21	L-6	Q43	H-7	RV26	H-2		
IC22	K-6	Q44	L-2	RV27	H-3		
IC23	H-9	Q45	L-2	RV28	B-2		
IC24	H-10	Q46	K-2	TP1	B-4		
IC25	E-8	Q47	K-2	TP2	C-4		
IC26	C-8	Q48	J-2	TP3	B-6		
IC27	D-7	Q49	J-2	TP4	K-9		
IC28	F-6	Q50	G-2	TP5	L-9		
IC29	F-7	Q51	E-2	TP6	K-7		
IC30	J-4	Q52	L-3	TP7	K-7		
IC32	H-8	Q53	L-3	TP8	L-7		
IC33	F-2	Q54	K-3	TP9	K-6		
IC34	D-2	Q55	K-3	TP10	J-6		
IC35	H-5	Q56	J-3	TP11	C-10		
IC36	H-6	Q57	J-3	TP12	D-8		
IC37	L-4	Q58	G-3	TP13	E-9		
IC38	H-4	Q59	F-3	TP14	E-7		
IC39	J-2	Q60	F-3	TP15	F-7		
IC40	J-3	Q61	E-3	TP16	F-8		
IC41	A-2	Q62	E-3	TP17	G-10		

8-7(a)

DA-33P; D/A CONVERTER

S/N UP TO 11,080

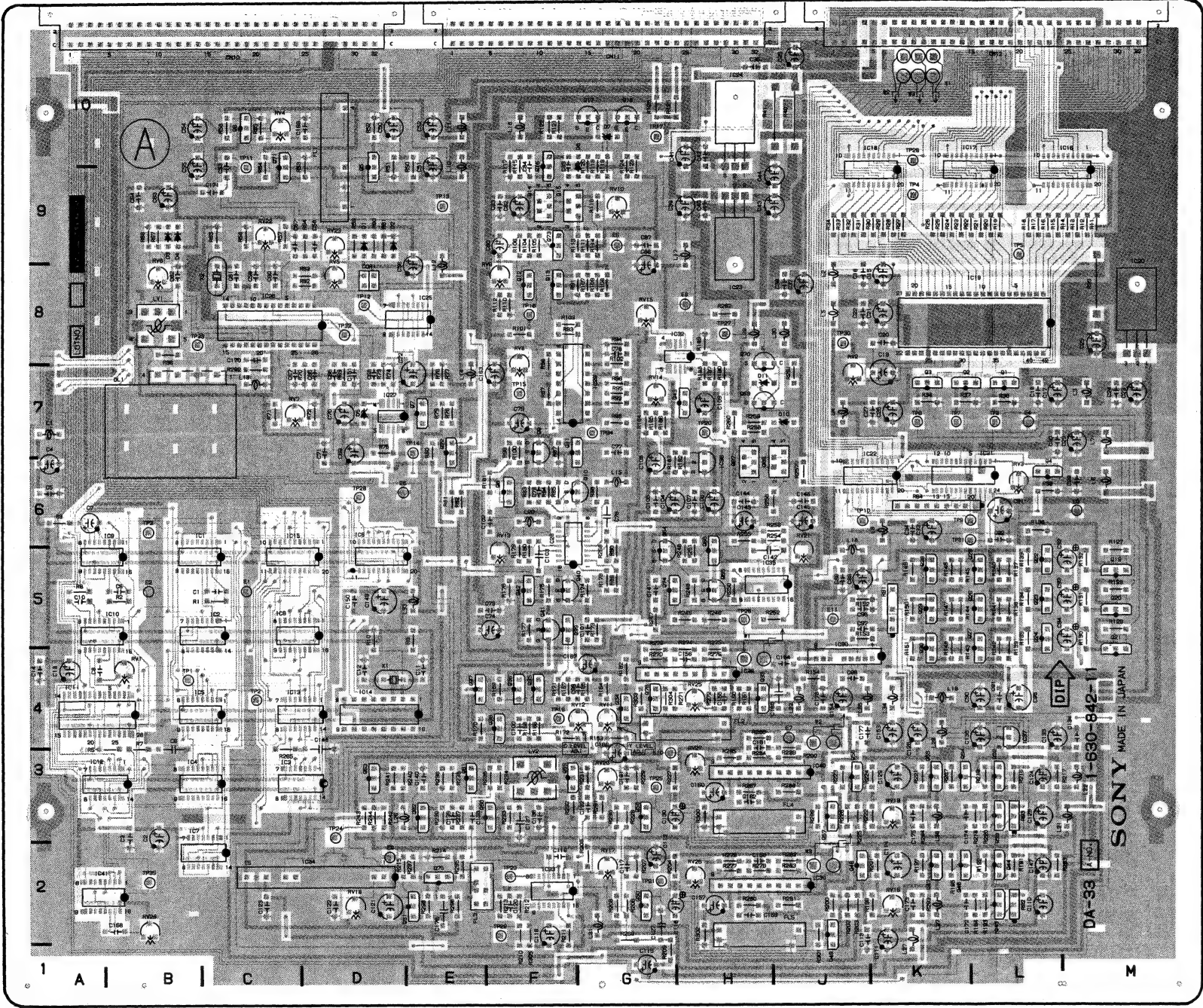


DA-33P -COM
1-630-842-11
DME-450P

8-8(a)

DA-33P; D/A CONVERTER

S/N UP TO 11,080



DA-33P —COMPONENT SIDE—
1-630-842-11
DME-450P

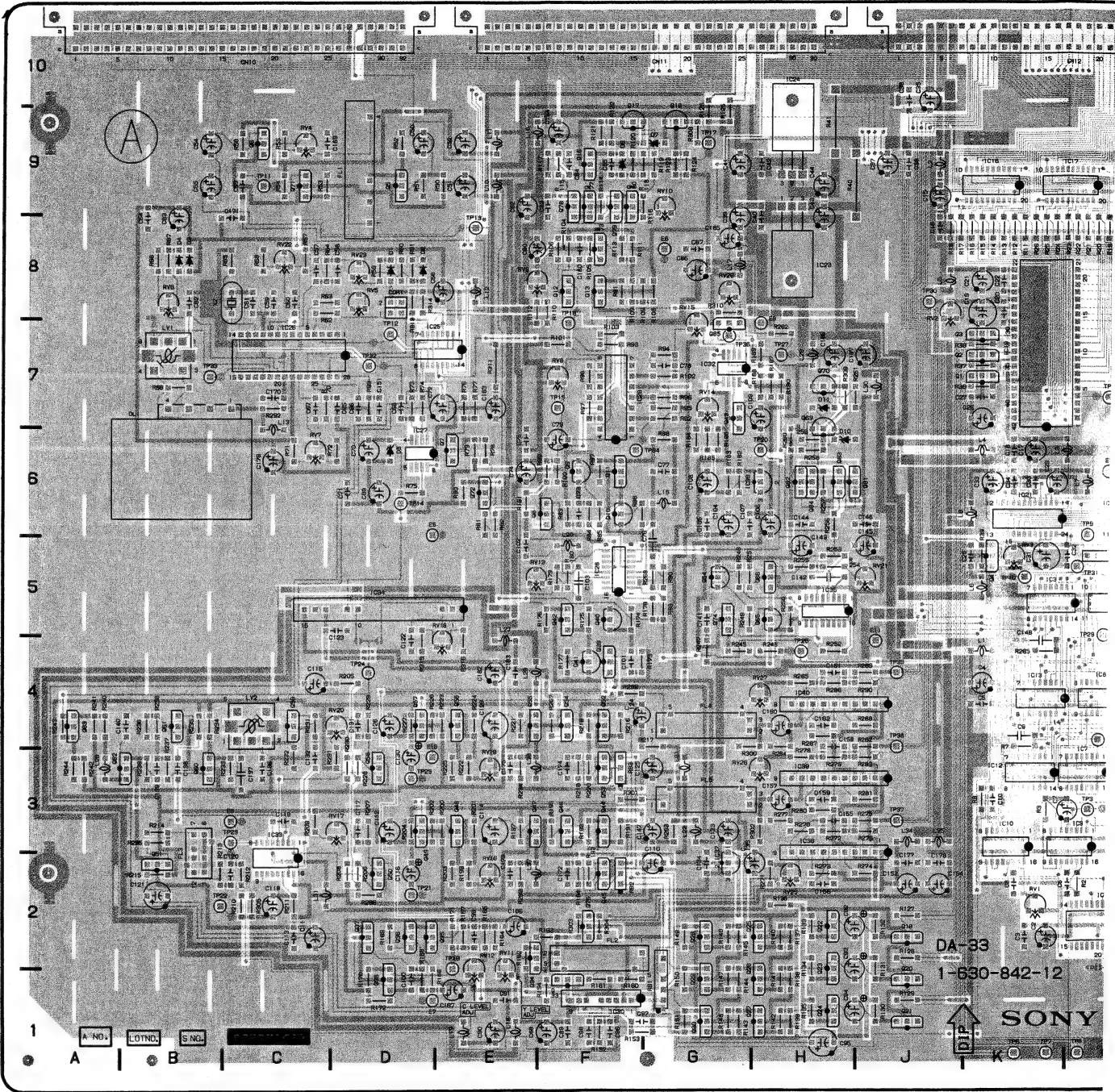
DA-33P (1-630-842-12)

CN10	C-10	IC40	H-4	Q63	A-4	TP11	C-9
CN11	G-10	IC41	M-2	Q64	G-5	TP12	D-7
CN12	L-10	LV2	C-4	Q65	H-5	TP13	E-8
D1	D-8	Q1	J-7	Q66	H-5	TP14	D-6
D2	D-8	Q2	J-7	Q69	H-7	TP15	F-7
D5	D-6	Q3	J-7	Q70	H-7	TP16	F-8
D6	F-9	Q4	K-5	Q71	C-9	TP17	G-9
D7	G-9	Q5	D-5	Q72	E-7	TP19	E-2
D10	H-6	Q6	C-9	Q73	F-8	TP20	H-6
D11	H-7	Q7	E-6	Q74	G-5	TP21	D-2
D12	G-8	Q8	E-6	Q76	F-2	TP23	F-2
D13	G-8	Q9	F-6	Q77	F-9	TP24	D-3
E1	M-6	Q10	F-6	Q78	F-8	TP25	G-3
E2	L-2	Q11	F-6	Q79	F-8	TP26	H-5
E3	L-6	Q12	F-8	Q80	F-9	TP27	H-8
E4	L-1	Q13	F-8	Q81	J-6	TP28	D-6
E5	D-6	Q16	F-9	Q82	H-6	TP29	K-10
E6	G-8	Q17	F-10	Q83	H-6	TP30	J-8
E7	D-1	Q18	G-10	Q84	H-6	TP31	K-6
E8	H-8	Q19	J-2	Q85	G-7	TP32	D-8
E9	C-3	Q20	J-2	RB1	G-1	TP33	B-8
E10	D-4	Q21	J-1	RB2	F-2	TP34	G-7
E11	J-5	Q22	H-2	RB3	F-3	TP35	B-2
IC1	M-3	Q23	H-2	RB4	L-5	TP36	G-7
IC2	L-3	Q24	H-1	RV1	K-2	TP37	J-3
IC3	K-5	Q25	G-2	RV2	J-8	TP38	J-4
IC4	M-3	Q26	G-2	RV3	K-5	TP39	J-4
IC5	L-3	Q27	G-1	RV4	C-9		
IC6	L-5	Q28	G-2	RV5	D-8		
IC7	L-3	Q29	G-1	RV7	C-6		
IC8	L-4	Q30	G-1	RV8	F-7		
IC9	L-3	Q33	F-1	RV9	E-8		
IC10	K-3	Q34	E-1	RV10	G-9		
IC11	L-2	Q35	E-2	RV11	E-2		
IC12	K-3	Q36	D-2	RV12	E-2		
IC13	K-4	Q37	D-2	RV13	E-5		
IC14	M-4	Q38	D-1	RV14	G-7		
IC15	M-5	Q39	F-4	RV15	G-8		
IC16	K-9	Q40	F-5	RV16	E-2		
IC17	L-9	Q41	F-4	RV17	D-3		
IC18	L-9	Q42	F-5	RV18	D-2		
IC19	K-7	Q43	G-7	RV19	K-3		
IC20	M-7	Q44	F-3	RV20	G-3		
IC21	K-6	Q45	F-2	RV21	J-5		
IC22	L-6	Q46	F-3	RV22	C-9		
IC23	H-8	Q47	E-3	RV23	D-9		
IC24	H-10	Q48	E-3	RV25	H-4		
IC25	E-7	Q49	D-3	RV26	H-2		
IC26	C-7	Q50	D-2	RV27	H-4		
IC27	D-6	Q51	B-2	RV28	M-2		
IC28	F-5	Q52	F-4	RC29	G-8		
IC29	F-7	Q53	F-3	TP1	L-3		
IC30	F-1	Q54	F-4	TP2	L-4		
IC32	G-7	Q55	E-4	TP3	L-3		
IC33	C-3	Q56	E-4	TP4	L-7		
IC34	D-5	Q57	D-4	TP5	L-7		
IC35	H-5	Q58	D-3	TP6	K-1		
IC36	G-6	Q59	C-4	TP7	K-1		
IC37	G-2	Q60	B-3	TP8	L-1		
IC38	H-3	Q61	B-4	TP9	L-6		
IC39	H-3	Q62	A-3	TP10	K-5		

8-7(b)

DA-33P; D/A CONVERTER

S/N 11,081 AND HIGHER

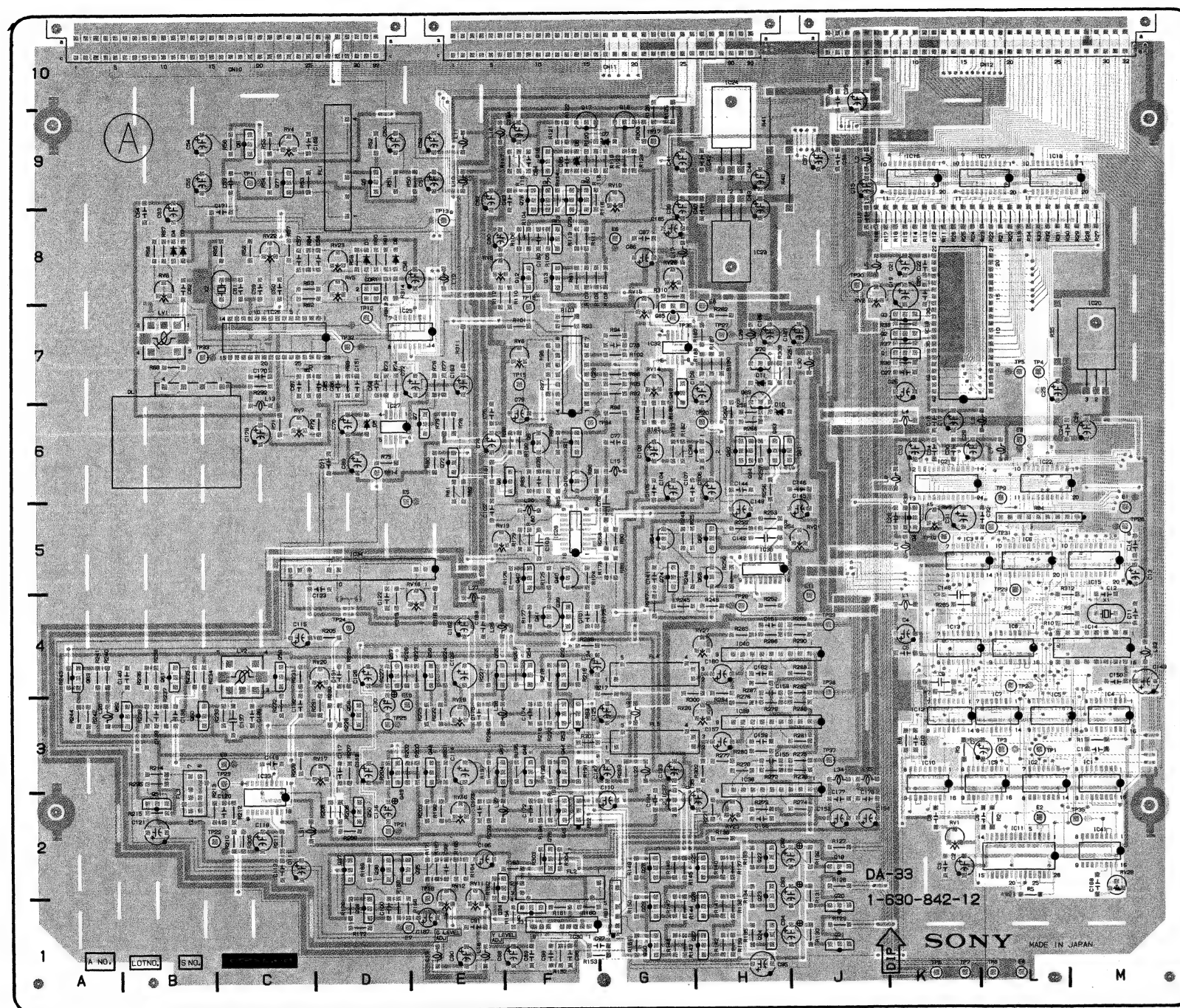


DA-33P
1-630-842-12
DME-450P

8-8(b)

DA-33P; D/A CONVERTER

S/N 11,081 AND HIGHER



DA-33P—COMPONENT SIDE—
1-630-842-12
DME-450P

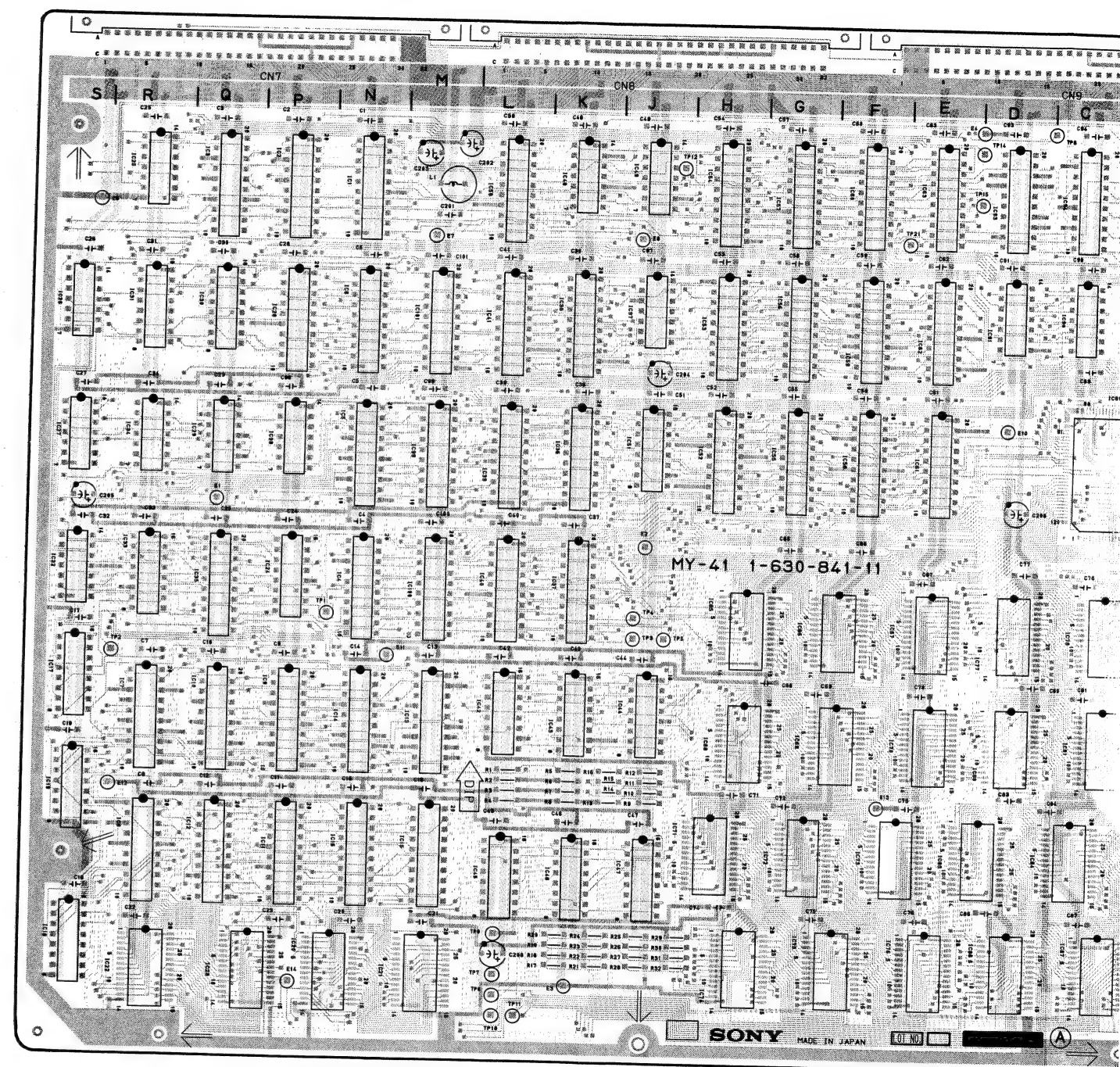
MY-41P (1-630-841-11, 12)

CN7	P-1	IC54	H-1
CN8	J-1	IC55	G-3
CN9	C-1	IC56	G-2
E1	Q-3	IC57	G-1
E2	J-3	IC58	F-3
E3	K-7	IC59	F-2
E4	E-1	IC60	F-1
E5	A-3	IC61	E-3
E6	S-1	IC62	E-2
E15	A-6	IC63	E-1
IC1	N-1	IC65	H-4
IC2	P-1	IC66	G-4
IC3	Q-1	IC67	E-4
IC4	N-4	IC68	H-5
IC5	N-3	IC69	F-5
IC6	N-2	IC70	E-5
IC7	R-5	IC71	H-6
IC8	R-6	IC72	G-6
IC9	P-5	IC73	F-6
IC10	Q-5	IC77	D-4
IC11	P-6	IC78	C-4
IC12	Q-6	IC79	B-4
IC13	M-5	IC80	D-5
IC14	N-5	IC81	C-5
IC15	M-6	IC82	A-5
IC16	N-6	IC83	D-6
IC17	S-5	IC84	C-6
IC18	S-7	IC85	B-6
IC19	S-6	IC89	B-3
IC20	N-7	IC90	C-2
IC22	R-7	IC91	D-2
IC24	P-4	IC93	D-1
IC25	R-1	IC94	C-1
IC26	S-2	IC95	B-1
IC27	S-3	IC96	A-2
IC28	P-2	IC97	J-2
IC29	Q-3	IC98	P-3
IC30	Q-2	IC99	M-3
IC31	R-2	IC100	M-4
IC32	S-4	IC101	M-2
IC33	R-4	TP1	P-4
IC34	R-3	TP2	R-4
IC35	Q-4	TP3	J-4
IC36	K-3	TP4	J-4
IC37	K-4	TP5	J-4
IC38	K-2	TP6	L-7
IC39	L-3	TP7	L-7
IC40	L-4	TP8	C-1
IC41	L-2	TP9	L-7
IC42	L-5	TP10	L-7
IC43	K-5	TP11	L-7
IC44	J-5	TP12	J-1
IC45	L-6	TP13	A-3
IC46	K-6	TP14	D-1
IC47	J-6	TP15	E-1
IC48	K-1	TP16	A-3
IC49	J-1	TP17	B-1
IC50	L-1	TP18	B-1
IC51	J-3	TP19	B-4
IC52	H-3	TP20	B-1
IC53	H-2	TP21	E-1

8-13(a)

MY-41P; MEMORY BOARD

S/N UP TO 10,480

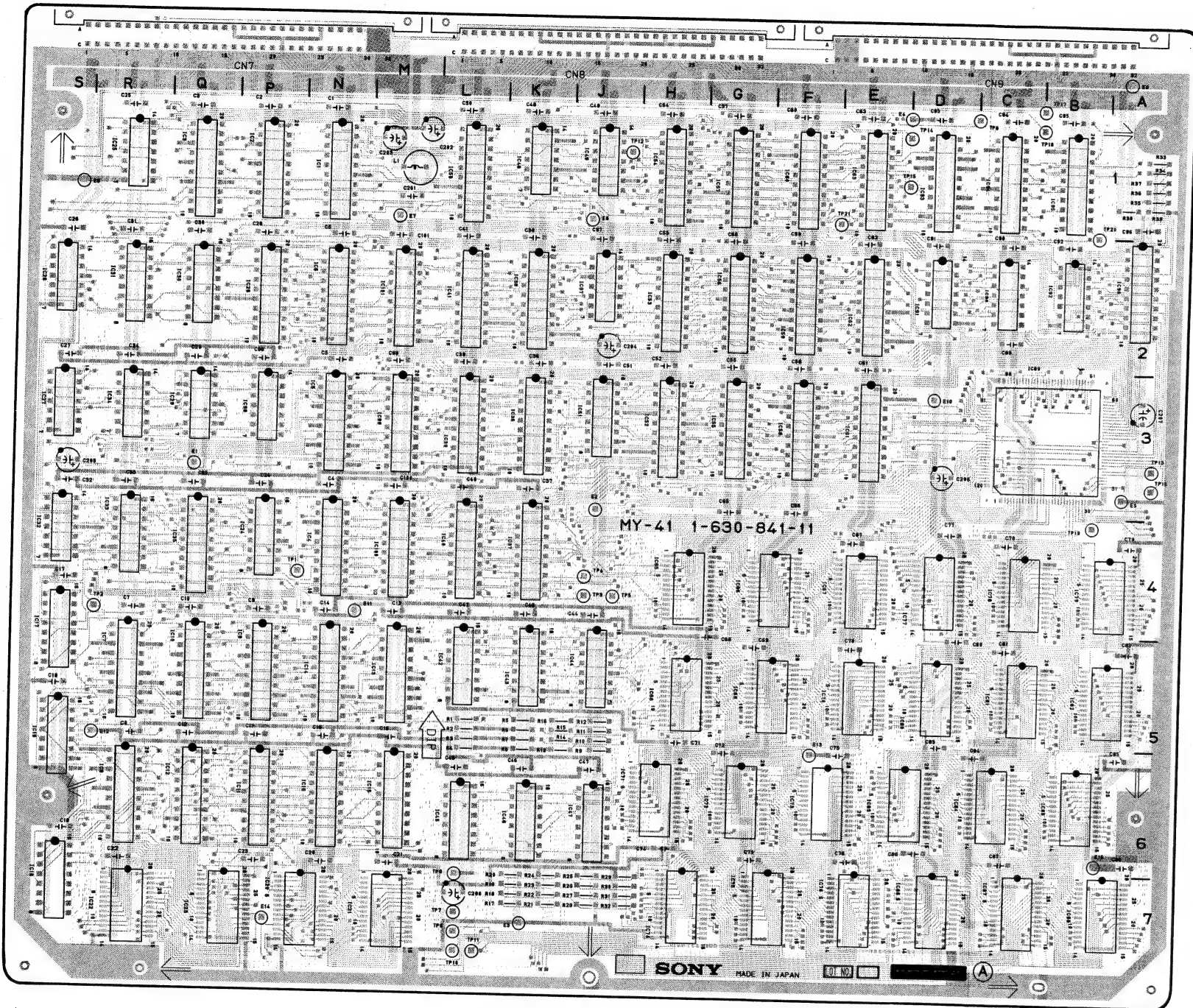


MY-41P-COMI
1-630-841-11, 12
DME-450P

8-14(a)

MY-41P; MEMORY BOARD

S/N UP TO 10,480



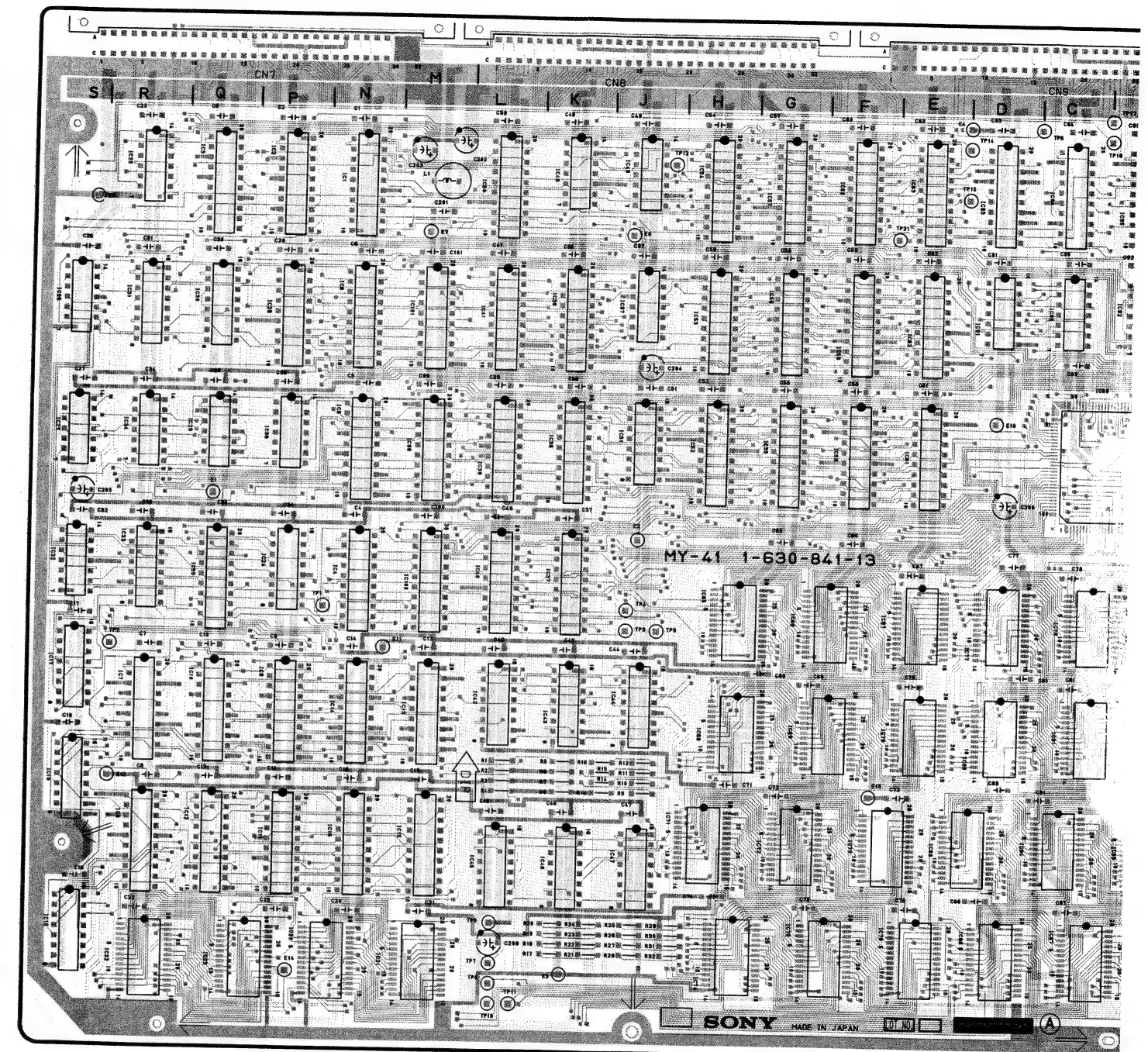
MY-41P -COMPONENT SIDE-
1-630-841-11, 12
DME-450P

MY-41P (1-630-841-13)

CN7	P-1	IC54	H-1
CN8	J-1	IC55	G-3
CN9	C-1	IC56	G-2
E1	Q-3	IC57	G-1
E2	J-3	IC58	F-3
E3	K-7	IC59	F-2
E4	E-1	IC60	F-1
E5	A-3	IC61	E-3
E6	S-1	IC62	E-2
E15	A-6	IC63	E-1
IC1	N-1	IC65	H-4
IC2	P-1	IC66	G-4
IC3	Q-1	IC67	E-4
IC4	N-4	IC68	H-5
IC5	N-3	IC69	F-5
IC6	N-2	IC70	E-5
IC7	R-5	IC71	H-6
IC8	R-6	IC72	G-6
IC9	P-5	IC73	F-6
IC10	Q-5	IC77	D-4
IC11	P-6	IC78	C-4
IC12	Q-6	IC79	B-4
IC13	M-5	IC80	D-5
IC14	N-5	IC81	C-5
IC15	M-6	IC82	A-5
IC16	N-6	IC83	D-6
IC17	S-5	IC84	C-6
IC18	S-7	IC85	B-6
IC19	S-6	IC89	B-3
IC20	N-7	IC90	C-2
IC22	R-7	IC91	D-2
IC24	P-4	IC93	D-1
IC25	R-1	IC94	C-1
IC26	S-2	IC95	B-1
IC27	S-3	IC96	A-2
IC28	P-2	IC97	J-2
IC29	Q-3	IC98	P-3
IC30	Q-2	IC99	M-3
IC31	R-2	IC100	M-4
IC32	S-4	IC101	M-2
IC33	R-4	TP1	P-4
IC34	R-3	TP2	R-4
IC35	Q-4	TP3	J-4
IC36	K-3	TP4	J-4
IC37	K-4	TP5	J-4
IC38	K-2	TP6	L-7
IC39	L-3	TP7	L-7
IC40	L-4	TP8	C-1
IC41	L-2	TP9	L-7
IC42	L-5	TP10	L-7
IC43	K-5	TP11	L-7
IC44	J-5	TP12	J-1
IC45	L-6	TP13	A-3
IC46	K-6	TP14	D-1
IC47	J-6	TP15	E-1
IC48	K-1	TP16	A-3
IC49	J-1	TP17	B-1
IC50	L-1	TP18	B-1
IC51	J-3	TP19	B-4
IC52	H-3	TP20	B-1
IC53	H-2	TP21	E-1

MY-41P; MEMORY BOARD

S/N 10,481 AND HIGHER



MY-41P -COM
1-630-841-13
DME-450P

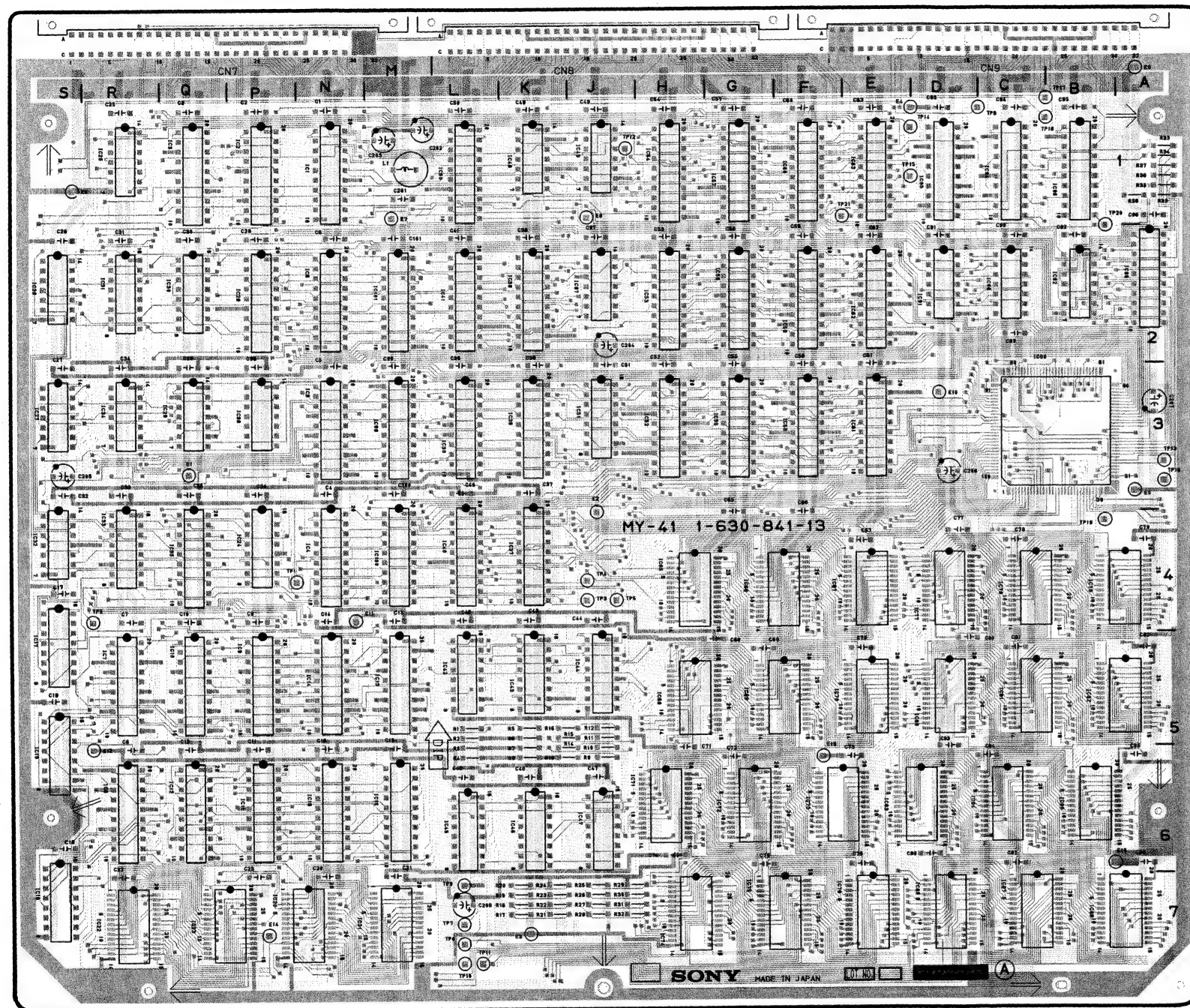
MY-41P

MY-41P

MY-41P

MY-41P; MEMORY BOARD

S/N 10,481 AND HIGHER

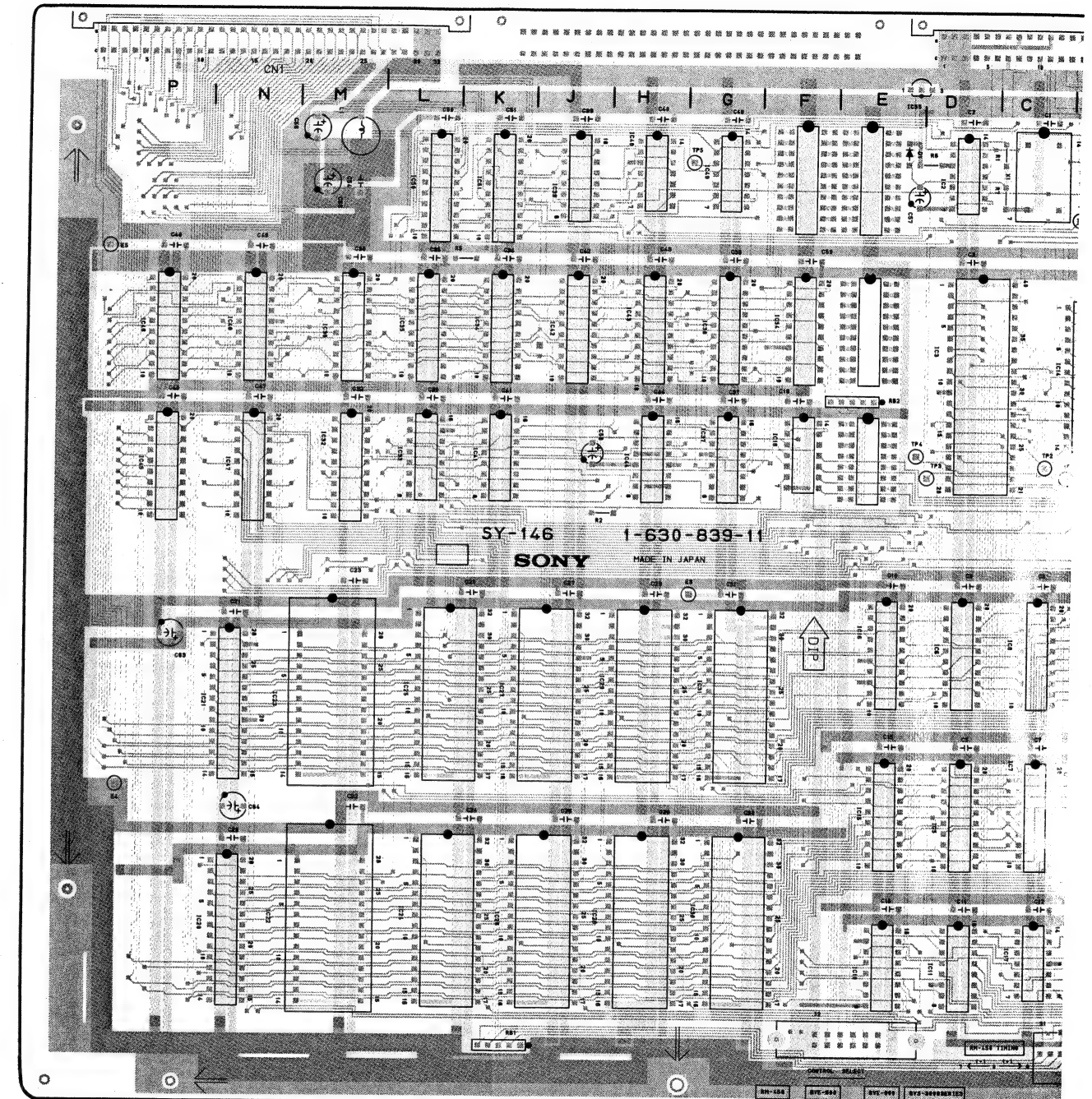


MY-41P -COMPONENT SIDE-
1-630-841-13
DME-450P

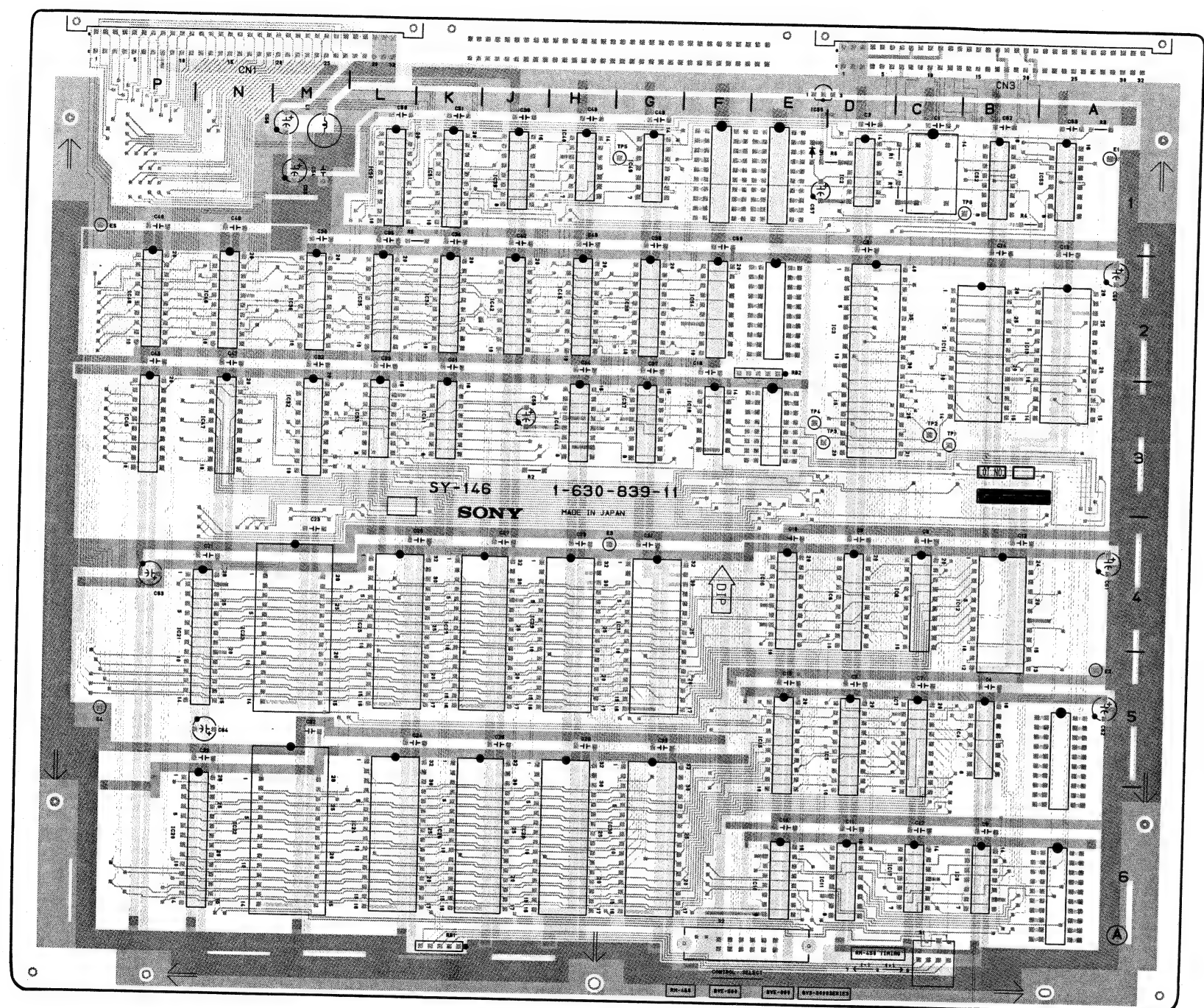
SY-146P (1-630-839-11, 12)

CN1	N-1	TP1	C-3
CN3	B-1	TP2	C-3
D1	E-1	TP3	D-3
E1	A-1	TP4	E-3
E2	A-5	TP5	G-1
E3	G-4	TP6	B-1
E4	P-5		
E5	P-1		
IC2	D-1		
IC3	D-2		
IC4	B-5		
IC5	D-5		
IC6	D-4		
IC7	C-5		
IC8	C-4		
IC9	B-6		
IC10	E-6		
IC11	D-6		
IC12	B-4		
IC13	A-2		
IC14	B-2		
IC15	E-5		
IC16	E-4		
IC17	C-6		
IC18	F-3		
IC20	N-6		
IC21	N-5		
IC22	N-6		
IC23	M-5		
IC24	L-6		
IC25	L-4		
IC26	J-6		
IC27	J-4		
IC32	N-3		
IC33	L-3		
IC34	K-2		
IC35	L-2		
IC36	M-2		
IC37	G-3		
IC38	G-2		
IC39	J-1		
IC40	H-1		
IC41	K-3		
IC42	J-2		
IC43	H-2		
IC44	H-3		
IC45	P-3		
IC46	P-2		
IC47	N-3		
IC48	N-2		
IC49	G-1		
IC50	L-1		
IC51	K-1		
IC52	B-1		
IC53	A-1		
IC54	F-2		
IC55	E-1		
RB1	K-6		
RB2	E-3		
S1	C-6		
S2	F-6		

SY-146P; SYSTEM CONTROL BOARD



SY-146P; SYSTEM CONTROL BOARD



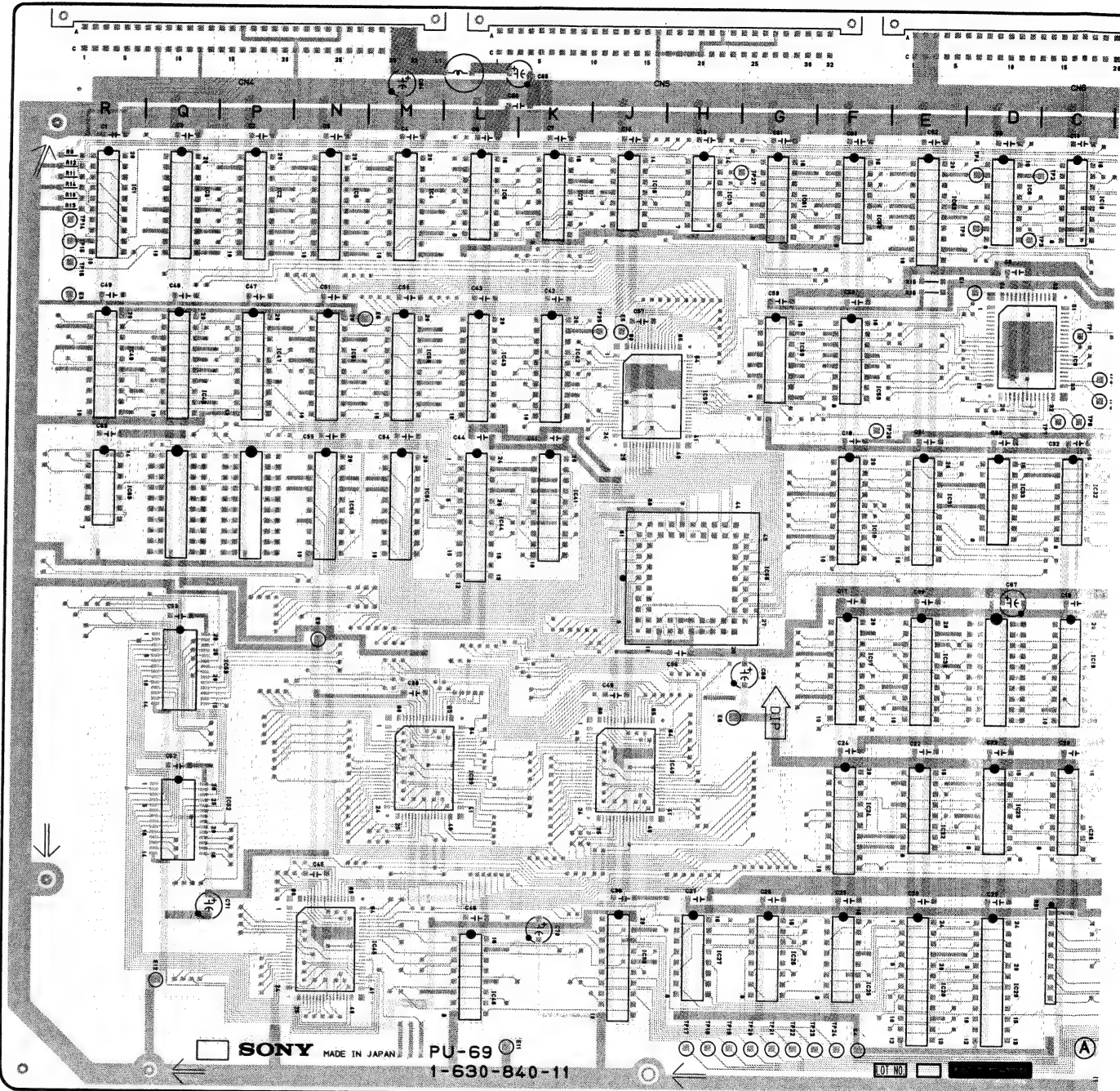
SY-146P —COMPONENT SIDE—
1-630-839-11, 12
DME-450P

PU-69 (1-630-840-11, 12)

CN4	P-1	IC50	M-2
CN5	J-1	IC51	N-2
CN6	C-1	IC52	Q-5
E1	D-2	IC53	Q-4
E2	A-1	IC54	M-3
E3	R-2	IC55	N-3
E4	F-6	IC56	H-3
E5	J-2	IC57	J-2
E7	B-4	IC58	F-2
E9	N-4	IC59	G-2
E12	Q-6	IC60	F-1
IC1	R-1	IC61	G-1
IC2	P-1	IC62	E-1
IC3	Q-1	RB1	C-6
IC4	N-1	TP1	C-2
IC5	N-1	TP2	C-1
IC6	L-1	TP3	D-1
IC7	K-1	TP4	D-1
IC8	D-1	TP5	D-1
IC9	D-2	TP6	C-2
IC10	C-1	TP7	C-2
IC11	B-1	TP8	C-2
IC12	A-1	TP9	C-2
IC13	H-1	TP10	A-2
IC14	A-2	TP11	A-2
IC15	B-2	TP12	A-2
IC16	J-1	TP13	A-2
IC17	F-4	TP14	R-1
IC18	F-3	TP15	R-1
IC19	C-4	TP16	R-2
IC20	C-5	TP17	H-6
IC21	B-5	TP18	H-6
IC22	E-5	TP19	G-6
IC23	D-5	TP20	G-6
IC24	F-5	TP21	G-6
IC25	F-6	TP22	G-6
IC26	G-6	TP23	F-6
IC27	H-6	TP24	F-6
IC28	E-6	TP25	J-2
IC29	D-6	TP26	F-2
IC30	E-4	TP27	G-1
IC31	E-3		
IC32	C-3		
IC33	D-3		
IC34	A-6		
IC35	A-3		
IC36	B-3		
IC37	B-6		
IC38	J-6		
IC39	M-5		
IC40	J-5		
IC41	K-3		
IC42	K-2		
IC43	L-2		
IC44	L-3		
IC45	N-6		
IC46	L-6		
IC47	P-2		
IC48	Q-2		
IC49	R-2		

PU-69; PROCESS BOARD

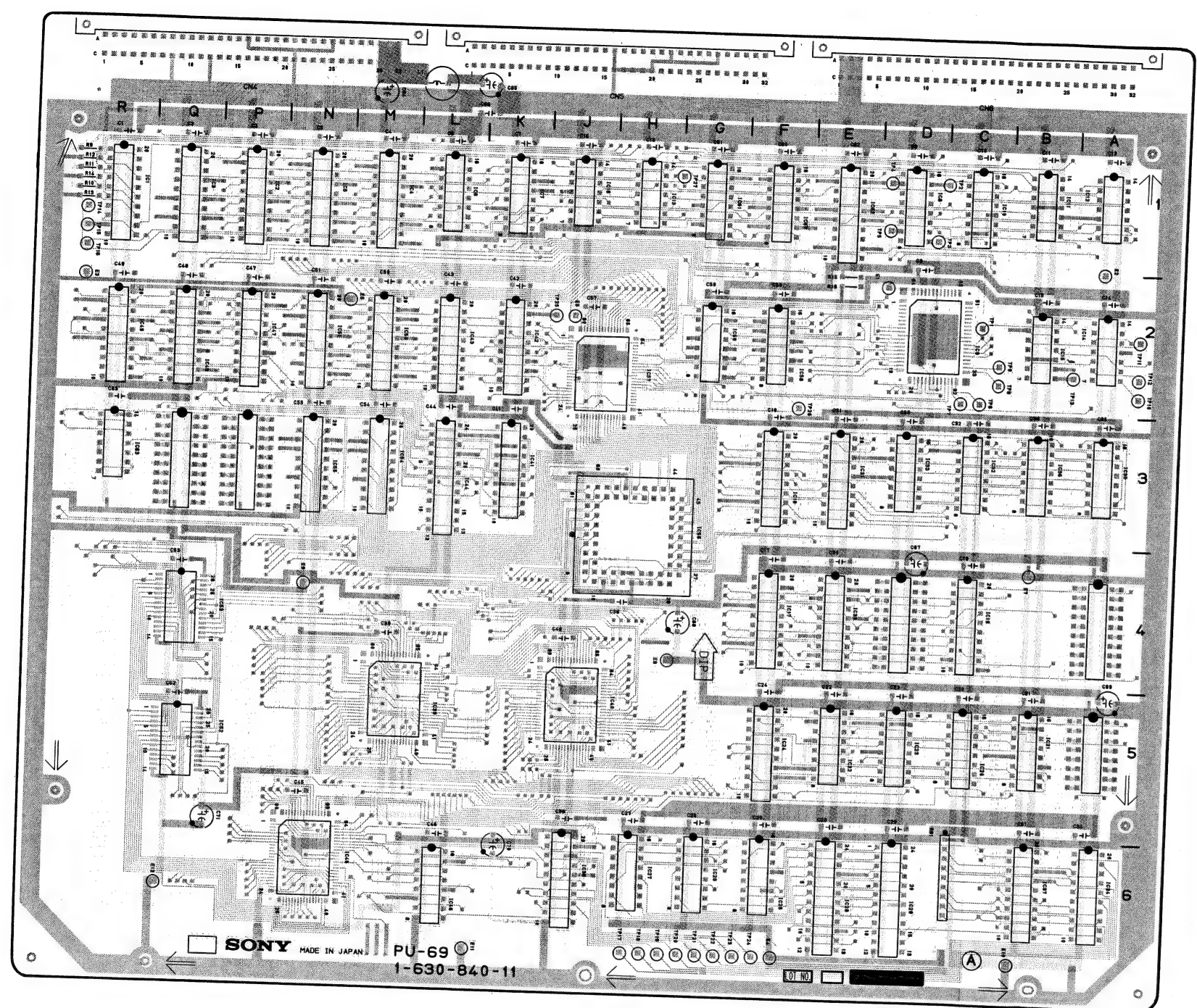
S/N UP TO 10,480



PU-69
1-630-840-11
DME-450P

PU-69; PROCESS BOARD

S/N UP TO 10,480



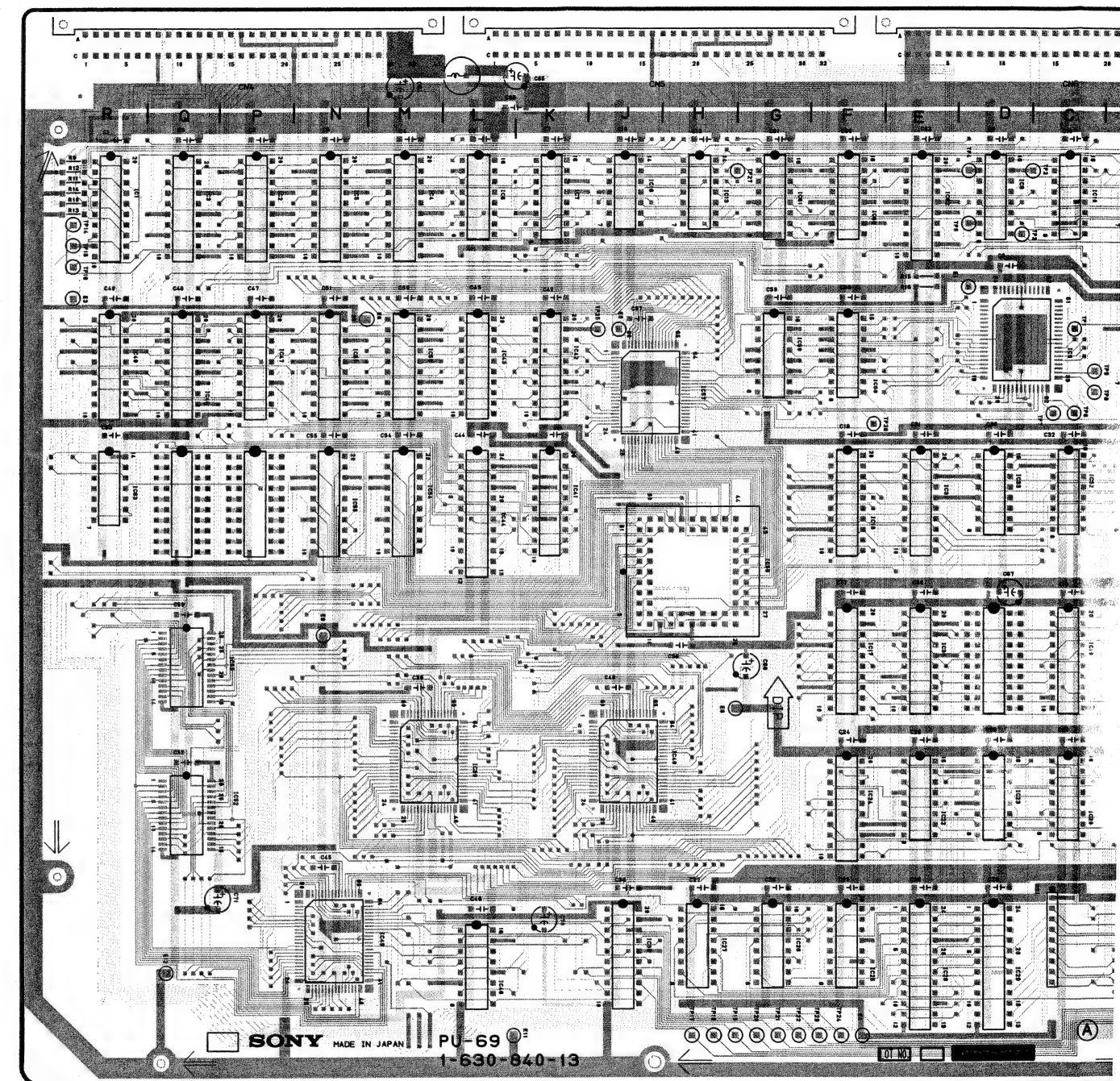
PU-69 -COMPONENT SIDE-
1-630-840-11. 12
DME-450P

PU-69 (1-630-840-13)

CN4	P-1	IC50	M-2
CN5	J-1	IC51	N-2
CN6	C-1	IC52	Q-5
E1	D-2	IC53	Q-4
E2	A-1	IC54	M-3
E3	R-2	IC55	N-3
E4	F-6	IC56	H-3
E5	J-2	IC57	J-2
E7	B-4	IC58	F-2
E9	N-4	IC59	G-2
E12	Q-6	IC60	F-1
IC1	R-1	IC61	G-1
IC2	P-1	IC62	E-1
IC3	Q-1	RB1	C-6
IC4	N-1	TP1	C-2
IC5	N-1	TP2	C-1
IC6	L-1	TP3	D-1
IC7	K-1	TP4	D-1
IC8	D-1	TP5	D-1
IC9	D-2	TP6	C-2
IC10	C-1	TP7	C-2
IC11	B-1	TP8	C-2
IC12	A-1	TP9	C-2
IC13	H-1	TP10	A-2
IC14	A-2	TP11	A-2
IC15	B-2	TP12	A-2
IC16	J-1	TP13	A-2
IC17	F-4	TP14	R-1
IC18	F-3	TP15	R-1
IC19	C-4	TP16	R-2
IC20	C-5	TP17	H-6
IC21	B-5	TP18	H-6
IC22	E-5	TP19	G-6
IC23	D-5	TP20	G-6
IC24	F-5	TP21	G-6
IC25	F-6	TP22	G-6
IC26	G-6	TP23	F-6
IC27	H-6	TP24	F-6
IC28	E-6	TP25	J-2
IC29	D-6	TP26	F-2
IC30	E-4	TP27	G-1
IC31	E-3		
IC32	C-3		
IC33	D-3		
IC34	A-6		
IC35	A-3		
IC36	B-3		
IC37	B-6		
IC38	J-6		
IC39	M-5		
IC40	J-5		
IC41	K-3		
IC42	K-2		
IC43	L-2		
IC44	L-3		
IC45	N-6		
IC46	L-6		
IC47	P-2		
IC48	Q-2		
IC49	R-2		

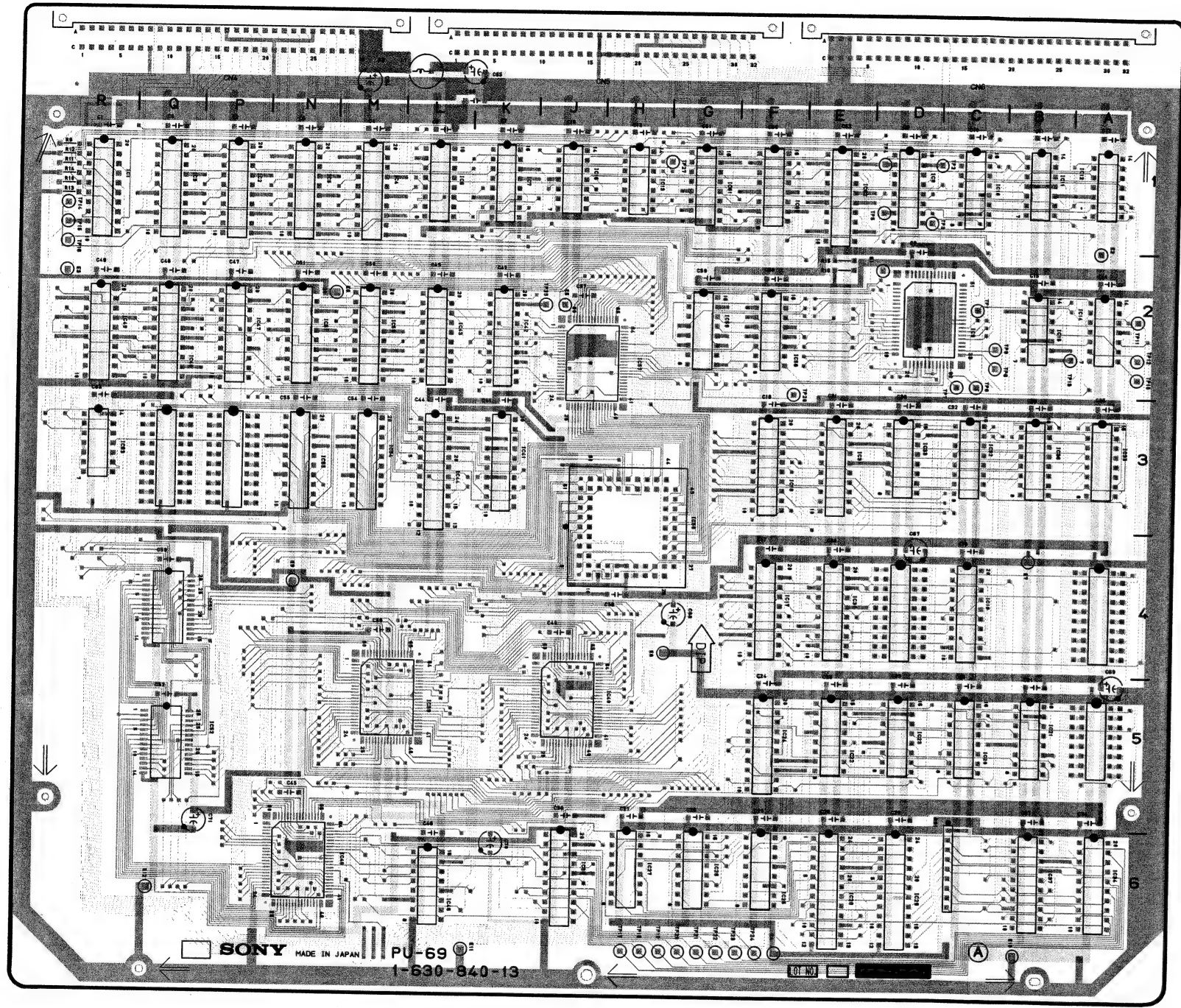
PU-69; PROCESS BOARD

S/N 10,481 AND HIGHER



PU-69
 1-630-840-13
 DME-450P

PU-69; PROCESS BOARD
S/N 10,481 AND HIGHER

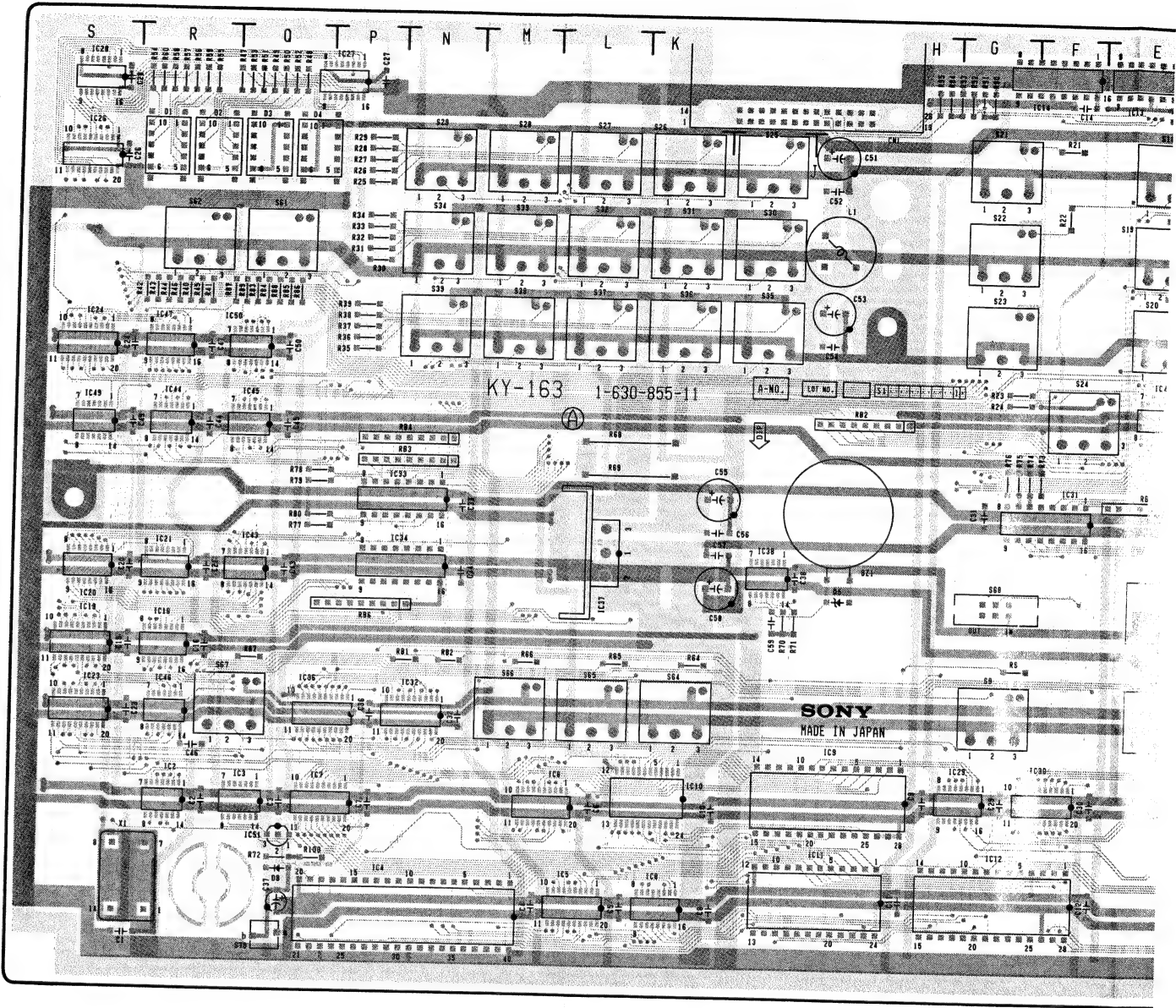


PU-69 —COMPONENT SIDE—
1-630-840-13
DME-450P

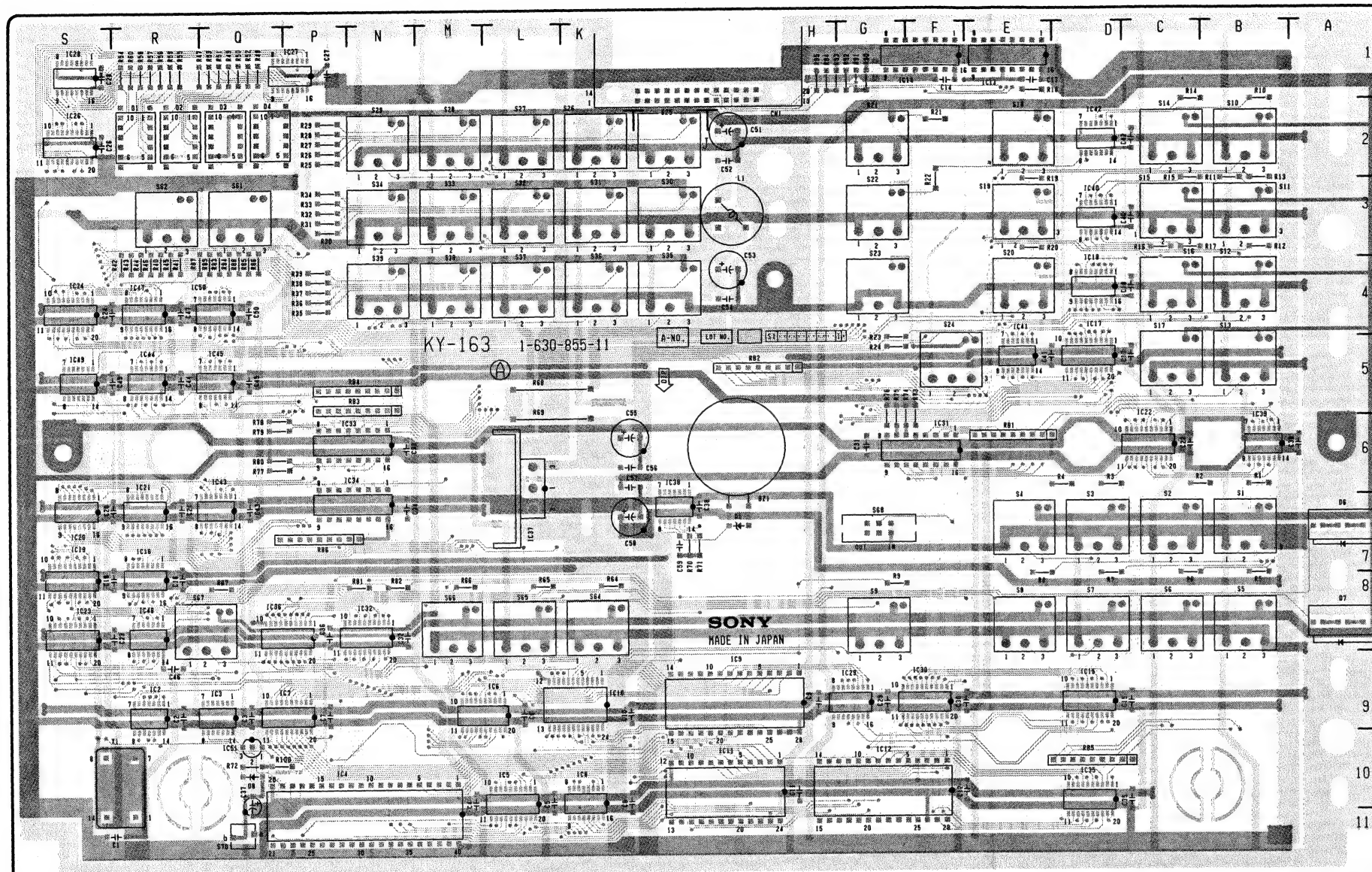
KY-163 (1-630-855-11, 12)

CN1	H-2	RB5	D-10
D1	R-2	RB6	P-7
D2	R-2	S68	G-7
D3	Q-2	S70	Q-11
D4	Q-2		
D5	H-7		
D6	A-7		
D7	A-8		
D8	Q-10		
IC2	R-9		
IC3	Q-9		
IC4	N-11		
IC5	L-10		
IC6	L-9		
IC7	P-9		
IC8	K-10		
IC9	H-9		
IC10	K-9		
IC11	H-10		
IC12	G-10		
IC13	E-1		
IC14	F-1		
IC15	D-9		
IC16	R-8		
IC17	D-5		
IC18	D-4		
IC19	S-8		
IC20	S-7		
IC21	R-7		
IC22	C-6		
IC23	S-8		
IC24	S-4		
IC26	S-2		
IC27	P-1		
IC28	S-1		
IC29	G-9		
IC30	F-9		
IC31	F-6		
IC32	N-8		
IC33	N-6		
IC34	N-7		
IC35	D-10		
IC36	P-8		
IC37	L-6		
IC38	J-7		
IC39	B-6		
IC40	D-3		
IC41	E-5		
IC42	D-2		
IC43	Q-7		
IC44	R-5		
IC45	Q-5		
IC46	R-8		
IC47	R-4		
IC49	S-5		
IC50	Q-4		
IC51	Q-10		
RB1	E-6		
RB2	H-5		
RB3	N-5		
RB4	N-5		

KY-163; FUNCTION KEYBOARD



KY-163; FUNCTION KEYBOARD



KY-163 —COMPONENT SIDE—
1-630-855-11, 12
DME-450P

1-630-845-11 JAPAN SONY A-NO LOT CN-321

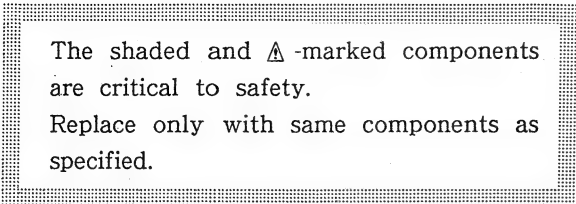
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8-39

SECTION 9

SPARE PARTS AND ACCESSORIES

9-1. PARTS INFORMATION

- (1) The shaded and Δ -marked components are critical to safety. Replace only with same components as specified.

- (2) Replacement Parts supplied from the Sony Parts Center will sometimes have a different shape from the original parts. This is due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts". This manual's exploded views and electrical spare parts list indicate the part numbers of "the standardized genuine parts at the present". Regarding engineering part changes in out engineering department, refer to Sony service bulletins and service manual supplements.
- (3) The parts marked with "s" in the SP column of the exploded views and electrical spare parts list are normally stocked for replacement purposes. The parts marked with "o" in the SP column are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow for additional delivery time.
- (4) Item with no part number and/or no description are not stocked because they are seldom required for routine service.

(5) ABBREVIATIONS

Ref. No.	Description
C	; CAPACITOR
CB	; CIRCUIT BREAKER
CN	; CONNECTOR
D	; DIODE
IC	; INTEGRATED CIRCUIT
L	; INDUCTOR
Q	; TRANSISTOR
R	; RESISTOR
RB	; RESISTOR BLOCK
RV	; VARIABLE RESISTOR
S (SW)	; SWITCH
T	; TRANSFORMER
X	; CRYSTAL

All capacitors are in micro farads unless otherwise specified.

All inductors are in micro henries unless otherwise specified.

All resistors are in ohms.

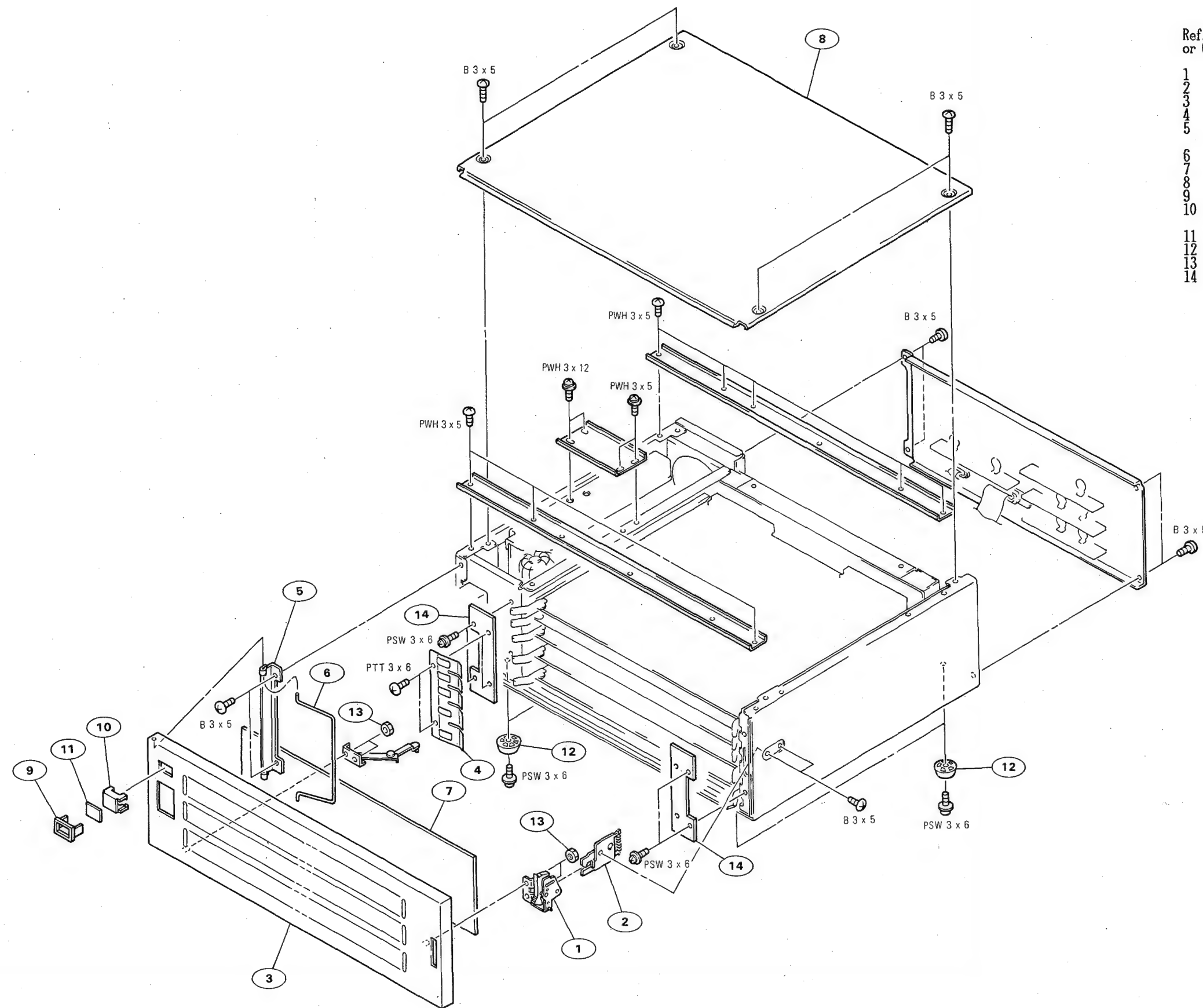
9-2. EXPLODED VIEW

Exploded views are composed of the following blocks.

- (1) Ornamental Block (Pross Unit Assy)
- (2) Chassis Block (Pross Unit Assy)
- (3) Rear Block (Pross Unit Assy)
- (4) Console Unit Assy

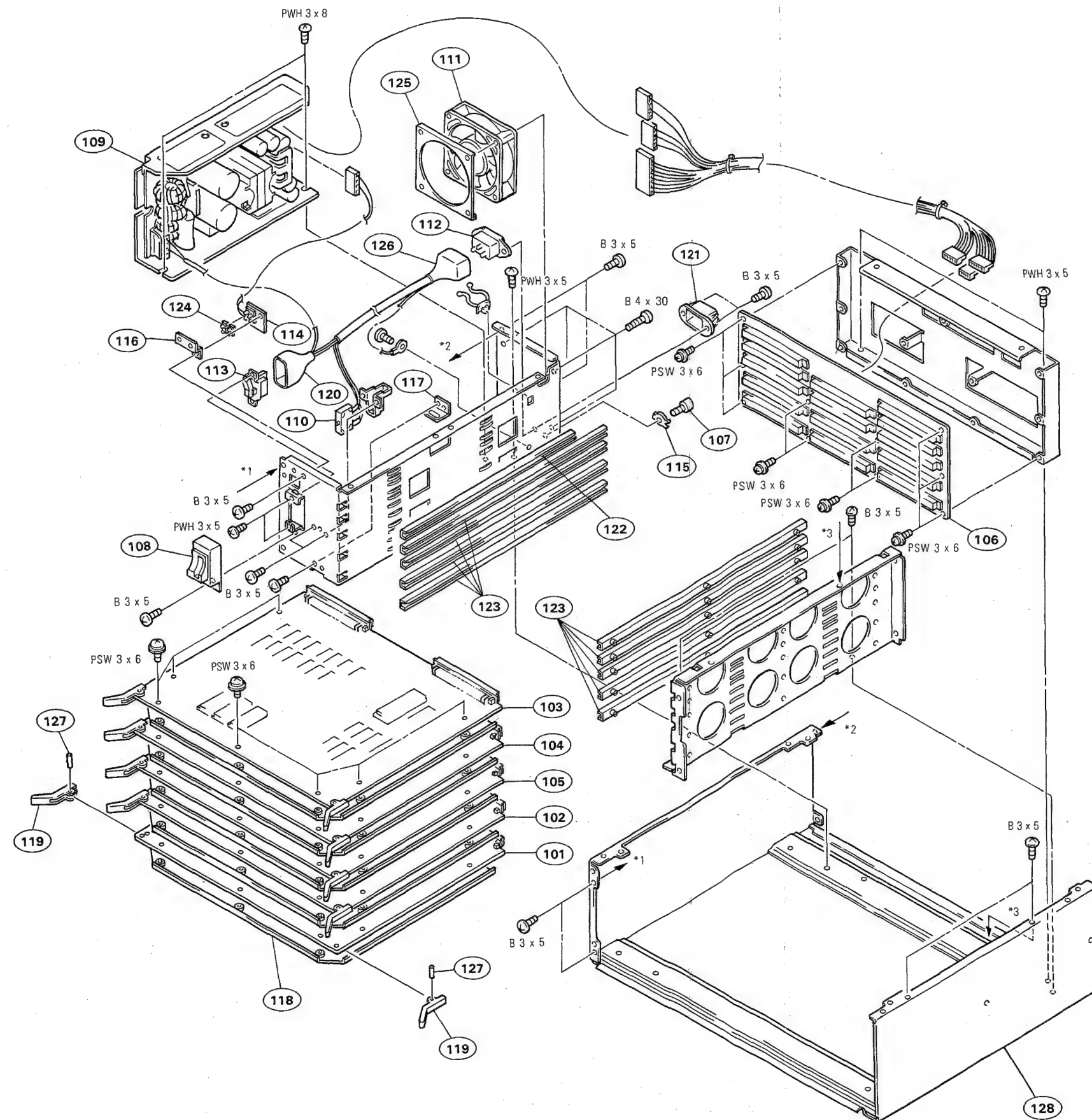
ORNAMENTAL BLOCK

ORNAMENTAL BLOCK



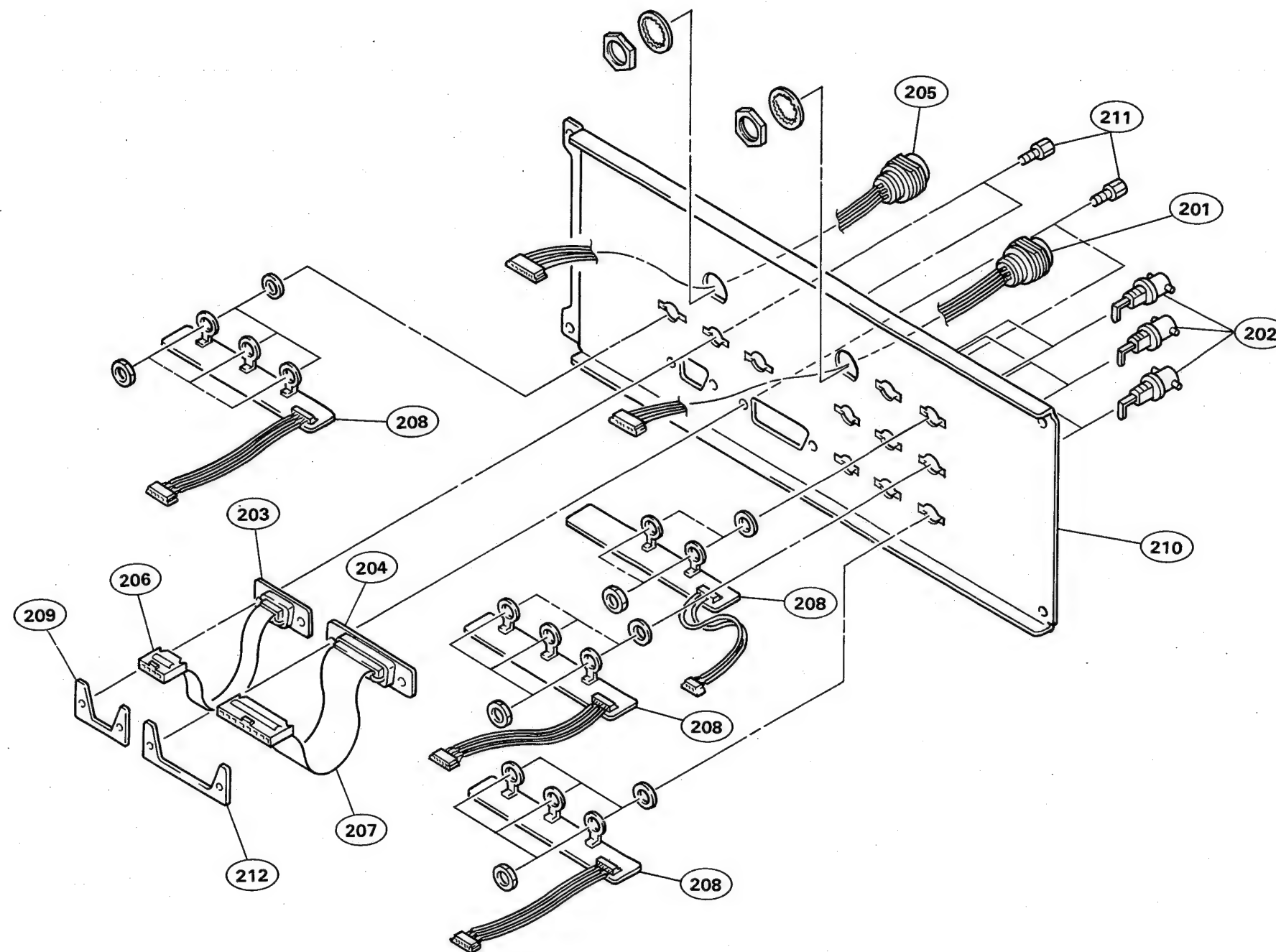
Ref. No. or Q'ty	Part No.	SP Description
1	A-6279-484-A	o HANDLE ASSY, DOOR
2	X-2127-216-1	o LOCK ASSY, DOOR
3	X-2127-234-1	o PANEL ASSY, FRONT
4	2-139-221-01	o SPRING
5	2-139-012-01	o HINGE (3U)
6	2-139-020-01	o SHAFT (3U), HINGE
7	2-139-072-01	o FILTER (3U)
8	2-182-935-01	o PLATE (D350), TOP
9	2-249-303-01	o WINDOW (2) REMOTE CONTROL
10	2-249-304-02	o FRAME (2) WINDOW REMOTE CONTROL
11	2-249-353-00	o COVER, LAMP
12	4-906-391-01	o FOOT
13	7-684-023-04	s N3, TYPE 2
14	2-139-069-01	o RETAINER, PC BOARD

CHASSIS BLOCK CHASSIS BLOCK



Ref. No. or Q'ty	Part No.	SP Description
101	A-6257-273-A	o MOUNTED CIRCUIT BOARD, AD-44P
102	A-6257-274-A	o MOUNTED CIRCUIT BOARD, DA-33P
103	A-6259-381-A	o MOUNTED CIRCUIT BOARD, SY-146P
104	A-6259-367-A	o MOUNTED CIRCUIT BOARD, PU-69
105	A-6259-382-A	o MOUNTED CIRCUIT BOARD, MY-41P
106	A-6265-119-A	o MOUNTED CIRCUIT BOARD, MB-249
107	X-2068-004-0	s TERMINAL ASSY
108	X-2127-224-1	s BRACKET ASSY, SW
109	A1-413-466-22	s REGULATOR, SWITCHING
110	A1-532-531-11	s BREAKER, CIRCUIT
111	1-541-524-11	s MOTOR, DC FAN
112	A1-560-222-11	s INLET, 3P
113	A1-570-117-11	s SWITCH, SEESAW (AC POWER)
114	1-620-338-11	o PC BOARD, LE-55
115	2-068-008-00	s WASHER
116	2-139-108-01	o BRACKET, LED
117	2-139-109-01	o TABEL (R), STOPPER
118	2-139-140-01	o PLATE, SHIELD
119	2-182-909-02	s LEVER PC BOARD
120	2-269-962-00	o COVER, SWITCH
121	2-990-241-01	o HOLDER (A), PLUG
122	3-673-676-31	o RAIL, PC BOARD GUIDE
123	3-673-676-41	o RAIL, GUIDE, PC BOARD
124	3-674-390-00	o HOLDER (B), LED
125	3-718-685-01	o NUT, PLATE, FAN
126	4-601-466-11	s COVER, 3P INLET
127	7-626-320-11	o PIN, SPRING 3x8
128	X-2127-229-1	o CHASSIS ASSY, 3U

REAR BLOCK REAR BLOCK

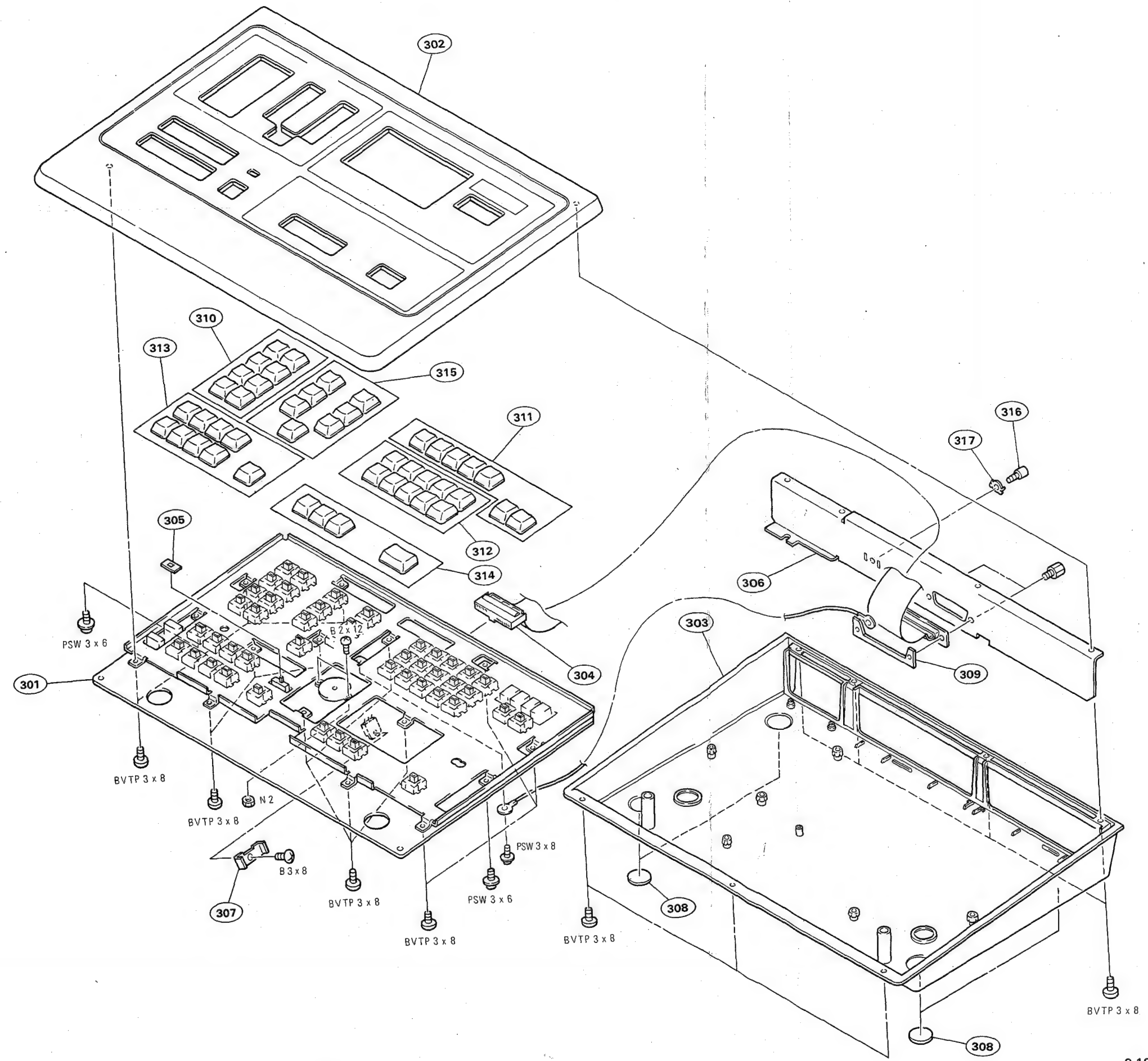


Ref. No. or Q'ty	Part No.	SP Description
201	1-562-160-00	s CONNECTOR (R-F) 12P
202	1-563-354-31	s CONNECTOR, BNC
203	1-563-846-21	s SOCKET, D-SUB CONNECTOR 9P
204	1-563-848-21	u SOCKET, D-SUB CONNECTOR 25P
205	1-564-407-11	s CONNECTOR (R-M)
206	1-574-990-11	s WIRE ASSY. FLAT TYPE (9 CORE)
207	1-574-991-11	s WIRE ASSY. FLAT TYPE (25 CORE)
208	1-630-845-11	o PC BOARD, CN-231
209	2-139-018-01	s NUT (D SUB 9P), PLATE
210	2-139-043-01	o PANEL, REAR
211	3-668-459-31	s SCREW, CONNECTOR
212	4-604-023-11	o NUT (D SUB), PLATE

CONSOLE UNIT ASSY

CONSOLE UNIT ASSY

Ref. No. or Q'ty	Part No.	SP Description
301	A-6259-369-A	o MOUNTED CIRCUIT BOARD, KY-163
302	X-2127-235-1	o PANEL ASSY, UPPER
303	X-2127-236-1	o PANEL ASSY, LOWER
304	1-574-992-11	s WIRE ASSY, FLAT TYPE(25 CORE)
305	2-139-035-01	o COVER, SWITCH
306	2-139-044-01	o PANEL, REAR
307	3-667-612-01	o HEAT SINK
308	3-714-101-01	s LEG (FRONT)
309	4-604-023-11	o NUT (D SUB), PLATE
310	A-6279-564-A	s BKGD/BORDER BLOCK 1
311	A-6279-565-A	s EFFECT BLOCK 1
312	A-6279-566-A	s EFFECT BLOCK 2
313	A-6279-567-A	s CROSS POINT BUS BLOCK
314	A-6279-568-A	s TRANSITION BLOCK
315	A-6279-569-A	s BKGD/BORDER BLOCK 2
316	X-2068-004-1	s TERMINAL ASSY
317	2-068-008-00	s WASHER



9-3. ELECTRICAL PART LIST

General Purpose Electrical Part List

Parts that are not listed in the "reference number order list" are shown in the following list.
Reference numbers are omitted.

CAPACITOR, CERAMIC, SBL

Part No. SP Description

1-161-039-00	s CAP, CERAMIC	0.001	10%	50V
1-161-041-00	s CAP, CERAMIC	0.0015	10%	50V
1-161-043-00	s CAP, CERAMIC	0.0022	10%	50V
1-161-045-00	s CAP, CERAMIC	0.0033	10%	50V
1-161-047-00	s CAP, CERAMIC	0.0047	10%	50V
1-161-049-00	s CAP, CERAMIC	0.0068	10%	50V
1-161-051-00	s CAP, CERAMIC	0.01	10%	50V
1-161-053-00	s CAP, CERAMIC	0.015	10%	50V
1-161-055-00	s CAP, CERAMIC	0.022	10%	50V
1-161-057-00	s CAP, CERAMIC	0.033	10%	50V
1-161-021-11	s CAP, CERAMIC	0.047	10%	25V
1-161-059-00	s CAP, CERAMIC	0.047	10%	50V
1-161-061-00	s CAP, CERAMIC	0.068	10%	50V
1-161-772-11	s CAP, CERAMIC	0.1	10%	25V
1-161-063-00	s CAP, CERAMIC	0.1	10%	50V

CAPACITOR, ELECTROLYTIC

Part No. SP Description

1-124-902-00	s CAP, ELECT	0.47	20%	50V
1-124-791-11	s CAP, ELECT	1.0	20%	100V
1-124-925-11	s CAP, ELECT	2.2	20%	100V
1-123-382-00	s CAP, ELECT	3.3	20%	100V
1-124-927-00	s CAP, ELECT	4.7	20%	100V
1-123-875-91	s CAP, ELECT	10	20%	50V
1-124-915-11	s CAP, ELECT	10	20%	63V
1-124-667-11	s CAP, ELECT	10	20%	100V
1-124-908-11	s CAP, ELECT	22	20%	50V
1-124-916-11	s CAP, ELECT	22	20%	63V
1-124-929-11	s CAP, ELECT	22	20%	100V
1-124-963-11	s CAP, ELECT	33	20%	16V
1-124-482-11	s CAP, ELECT	33	20%	35V
1-124-917-11	s CAP, ELECT	33	20%	63V
1-124-930-11	s CAP, ELECT	33	20%	100V
1-124-446-11	s CAP, ELECT	47	20%	10V
1-124-477-11	s CAP, ELECT	47	20%	25V
1-124-910-11	s CAP, ELECT	47	20%	50V
1-124-918-11	s CAP, ELECT	47	20%	63V
1-124-931-11	s CAP, ELECT	47	20%	100V
1-124-443-00	s CAP, ELECT	100	20%	10V
1-126-101-11	s CAP, ELECT	100	20%	16V
1-124-478-11	s CAP, ELECT	100	20%	25V
1-124-122-11	s CAP, ELECT	100	20%	50V
1-124-572-11	s CAP, ELECT	100	20%	63V
1-123-605-00	s CAP, ELECT	100	20%	100V
1-124-444-00	s CAP, ELECT	220	20%	10V
1-124-120-11	s CAP, ELECT	220	20%	25V
1-124-484-11	s CAP, ELECT	220	20%	35V
1-124-911-11	s CAP, ELECT	220	20%	50V
1-124-919-51	s CAP, ELECT	220	20%	63V
1-124-628-11	s CAP, ELECT	220	20%	100V
1-124-442-00	s CAP, ELECT	330	20%	6.3V
1-124-604-00	s CAP, ELECT	330	20%	10V
1-124-119-00	s CAP, ELECT	330	20%	16V
1-124-479-11	s CAP, ELECT	330	20%	25V
1-124-485-11	s CAP, ELECT	330	20%	35V
1-124-912-11	s CAP, ELECT	330	20%	50V
1-124-472-11	s CAP, ELECT	470	20%	10V
1-124-475-11	s CAP, ELECT	470	20%	16V
1-124-480-11	s CAP, ELECT	470	20%	25V
1-126-104-11	s CAP, ELECT	470	20%	35V
1-124-913-11	s CAP, ELECT	470	20%	50V
1-124-921-11	s CAP, ELECT	470	20%	63V
1-124-471-00	s CAP, ELECT	1000	20%	6.3V
1-124-473-11	s CAP, ELECT	1000	20%	10V
1-124-555-00	s CAP, ELECT	1000	20%	16V
1-124-557-11	s CAP, ELECT	1000	20%	25V
1-126-105-11	s CAP, ELECT	1000	20%	35V
1-124-637-11	s CAP, ELECT	1000	20%	50V
1-124-922-11	s CAP, ELECT	1000	20%	63V
1-124-893-11	s CAP, ELECT	2200	20%	10V
1-124-556-11	s CAP, ELECT	2200	20%	16V
1-124-563-11	s CAP, ELECT	2200	20%	25V
1-124-618-11	s CAP, ELECT	2200	20%	35V
1-124-607-11	s CAP, ELECT	2200	20%	50V
1-124-621-11	s CAP, ELECT	3300	20%	6.3V
1-124-887-00	s CAP, ELECT	3300	20%	16V
1-124-636-00	s CAP, ELECT	3300	20%	25V
1-124-762-00	s CAP, ELECT	4700	20%	10V

(CAPACITOR, ELECTROLYTIC)

Part No. SP Description

1-124-898-11 s CAP, ELECT 4700 20% 16V
 1-124-564-11 s CAP, ELECT 4700 20% 25V
 1-124-891-11 s CAP, ELECT 10000 20% 6.3V
 1-124-763-00 s CAP, ELECT 10000 20% 10V
 1-124-902-00 s CAP, ELECT 0.47 20% 50V

1-124-791-11 s CAP, ELECT 1.0 20% 100V
 1-124-925-11 s CAP, ELECT 2.2 20% 100V
 1-123-382-00 s CAP, ELECT 3.3 20% 100V
 1-124-927-00 s CAP, ELECT 4.7 20% 100V
 1-123-875-91 s CAP, ELECT 10 20% 50V

1-124-908-11 s CAP, ELECT 22 20% 50V
 1-124-963-11 s CAP, ELECT 33 20% 16V
 1-124-482-11 s CAP, ELECT 33 20% 35V
 1-124-917-11 s CAP, ELECT 33 20% 63V
 1-124-446-11 s CAP, ELECT 47 20% 10V

1-124-477-11 s CAP, ELECT 47 20% 25V
 1-124-910-11 s CAP, ELECT 47 20% 50V
 1-124-443-00 s CAP, ELECT 100 20% 10V
 1-126-101-11 s CAP, ELECT 100 20% 16V
 1-124-478-11 s CAP, ELECT 100 20% 25V

1-124-122-11 s CAP, ELECT 100 20% 50V
 1-124-444-00 s CAP, ELECT 220 20% 10V
 1-124-120-11 s CAP, ELECT 220 20% 25V
 1-124-484-11 s CAP, ELECT 220 20% 35V
 1-124-911-11 s CAP, ELECT 220 20% 50V

1-124-442-00 s CAP, ELECT 330 20% 6.3V
 1-124-604-00 s CAP, ELECT 330 20% 10V
 1-124-119-00 s CAP, ELECT 330 20% 16V
 1-124-479-11 s CAP, ELECT 330 20% 25V
 1-124-485-11 s CAP, ELECT 330 20% 35V

1-124-912-11 s CAP, ELECT 330 20% 50V
 1-124-472-11 s CAP, ELECT 470 20% 10V
 1-124-475-11 s CAP, ELECT 470 20% 16V
 1-124-480-11 s CAP, ELECT 470 20% 25V
 1-126-104-11 s CAP, ELECT 470 20% 35V

1-124-913-11 s CAP, ELECT 470 20% 50V

RESISTOR, CARBON

Part No. SP Description

1-249-381-11 s RES, CARBON 1.0 5% 1/6W
 1-249-382-11 s RES, CARBON 1.2 5% 1/6W
 1-249-383-11 s RES, CARBON 1.5 5% 1/6W
 1-249-384-11 s RES, CARBON 1.8 5% 1/6W
 1-249-385-11 s RES, CARBON 2.2 5% 1/6W

1-249-386-11 s RES, CARBON 2.7 5% 1/6W
 1-249-387-11 s RES, CARBON 3.3 5% 1/6W
 1-249-388-11 s RES, CARBON 3.9 5% 1/6W
 1-249-389-11 s RES, CARBON 4.7 5% 1/6W
 1-249-390-11 s RES, CARBON 5.6 5% 1/6W

1-249-391-11 s RES, CARBON 6.8 5% 1/6W
 1-249-392-11 s RES, CARBON 8.2 5% 1/6W
 1-249-393-11 s RES, CARBON 10 5% 1/6W
 1-249-394-11 s RES, CARBON 12 5% 1/6W
 1-249-395-11 s RES, CARBON 15 5% 1/6W

1-249-396-11 s RES, CARBON 18 5% 1/6W
 1-249-397-11 s RES, CARBON 22 5% 1/6W
 1-249-398-11 s RES, CARBON 27 5% 1/6W
 1-249-399-11 s RES, CARBON 33 5% 1/6W
 1-249-400-11 s RES, CARBON 39 5% 1/6W

1-249-401-11 s RES, CARBON 47 5% 1/6W
 1-249-402-11 s RES, CARBON 56 5% 1/6W
 1-249-403-11 s RES, CARBON 68 5% 1/6W
 1-215-394-00 s RES, METAL 75 1% 1/6W
 1-249-404-11 s RES, CARBON 82 5% 1/6W

1-249-405-11 s RES, CARBON 100 5% 1/6W
 1-249-406-11 s RES, CARBON 120 5% 1/6W
 1-249-407-11 s RES, CARBON 150 5% 1/6W
 1-249-408-11 s RES, CARBON 180 5% 1/6W
 1-249-409-11 s RES, CARBON 220 5% 1/6W

1-249-410-11 s RES, CARBON 270 5% 1/6W
 1-249-411-11 s RES, CARBON 330 5% 1/6W
 1-249-412-11 s RES, CARBON 390 5% 1/6W
 1-249-413-11 s RES, CARBON 470 5% 1/6W
 1-249-414-11 s RES, CARBON 560 5% 1/6W

1-249-415-11 s RES, CARBON 680 5% 1/6W
 1-249-416-11 s RES, CARBON 820 5% 1/6W
 1-249-417-11 s RES, CARBON 1.0k 5% 1/6W
 1-249-418-11 s RES, CARBON 1.2k 5% 1/6W
 1-249-419-11 s RES, CARBON 1.5k 5% 1/6W

1-249-420-11 s RES, CARBON 1.8k 5% 1/6W
 1-249-421-11 s RES, CARBON 2.2k 5% 1/6W
 1-249-422-11 s RES, CARBON 2.7k 5% 1/6W
 1-249-423-11 s RES, CARBON 3.3k 5% 1/6W
 1-249-424-11 s RES, CARBON 3.9k 5% 1/6W

1-249-425-11 s RES, CARBON 4.7k 5% 1/6W
 1-249-426-11 s RES, CARBON 5.6k 5% 1/6W
 1-249-427-11 s RES, CARBON 6.8k 5% 1/6W
 1-249-428-11 s RES, CARBON 8.2k 5% 1/6W
 1-249-429-11 s RES, CARBON 10k 5% 1/6W

1-249-430-11 s RES, CARBON 12k 5% 1/6W
 1-249-431-11 s RES, CARBON 15k 5% 1/6W
 1-249-432-11 s RES, CARBON 18k 5% 1/6W
 1-249-433-11 s RES, CARBON 22k 5% 1/6W
 1-249-434-11 s RES, CARBON 27k 5% 1/6W

1-249-435-11 s RES, CARBON 33k 5% 1/6W
 1-249-436-11 s RES, CARBON 39k 5% 1/6W
 1-249-437-11 s RES, CARBON 47k 5% 1/6W
 1-249-438-11 s RES, CARBON 56k 5% 1/6W
 1-249-439-11 s RES, CARBON 68k 5% 1/6W

(RESISTOR, CARBON)

Part No.	SP Description
1-249-440-11	s RES, CARBON 82k 5% 1/6W
1-249-441-11	s RES, CARBON 100k 5% 1/6W
1-215-471-00	s RES, METAL 120k 1% 1/6W
1-215-473-00	s RES, METAL 150k 1% 1/6W
1-215-475-00	s RES, METAL 180k 1% 1/6W
1-215-477-00	s RES, METAL 220k 1% 1/6W
1-215-479-00	s RES, METAL 270k 1% 1/6W
1-215-481-00	s RES, METAL 330k 1% 1/6W
1-215-483-00	s RES, METAL 390k 1% 1/6W
1-215-485-00	s RES, METAL 470k 1% 1/6W
1-215-487-00	s RES, METAL 560k 1% 1/6W
1-215-489-00	s RES, METAL 680k 1% 1/6W
1-215-491-00	s RES, METAL 820k 1% 1/6W
1-215-493-00	s RES, METAL 1.0M 1% 1/6W

INDUCTOR, MICRO

Part No.	SP Description
1-408-876-00	s INDUCTOR, MICRO 0.18 5%
1-408-877-00	s INDUCTOR, MICRO 0.22 5%
1-408-878-00	s INDUCTOR, MICRO 0.33 5%
1-408-879-21	s INDUCTOR, MICRO 0.47 5%
1-408-931-00	s INDUCTOR, MICRO 0.56 5%
1-408-880-00	s INDUCTOR, MICRO 0.68 5%
1-408-763-00	s INDUCTOR, MICRO 0.82 5%
1-408-397-00	s INDUCTOR, MICRO 1.0 5%
1-408-398-00	s INDUCTOR, MICRO 1.2 5%
1-408-399-00	s INDUCTOR, MICRO 1.5 5%
1-408-400-00	s INDUCTOR, MICRO 1.8 5%
1-408-401-00	s INDUCTOR, MICRO 2.2 5%
1-408-402-00	s INDUCTOR, MICRO 2.7 5%
1-408-403-00	s INDUCTOR, MICRO 3.3 5%
1-408-404-00	s INDUCTOR, MICRO 3.9 5%
1-408-405-00	s INDUCTOR, MICRO 4.7 5%
1-408-406-00	s INDUCTOR, MICRO 5.6 5%
1-408-407-00	s INDUCTOR, MICRO 6.8 5%
1-408-408-00	s INDUCTOR, MICRO 8.2 5%
1-408-409-00	s INDUCTOR, MICRO 10 5%
1-408-410-00	s INDUCTOR, MICRO 12 5%
1-408-411-00	s INDUCTOR, MICRO 15 5%
1-408-412-00	s INDUCTOR, MICRO 18 5%
1-408-413-00	s INDUCTOR, MICRO 22 5%
1-408-414-00	s INDUCTOR, MICRO 27 5%
1-408-415-00	s INDUCTOR, MICRO 33 5%
1-408-416-00	s INDUCTOR, MICRO 39 5%
1-408-417-21	s INDUCTOR, MICRO 47 5%
1-408-418-00	s INDUCTOR, MICRO 56 5%
1-408-419-00	s INDUCTOR, MICRO 68 5%
1-408-420-00	s INDUCTOR, MICRO 82 5%
1-408-421-00	s INDUCTOR, MICRO 100 5%
1-408-422-00	s INDUCTOR, MICRO 120 5%
1-408-423-00	s INDUCTOR, MICRO 150 5%
1-408-424-00	s INDUCTOR, MICRO 180 5%
1-408-425-00	s INDUCTOR, MICRO 220 5%
1-408-426-00	s INDUCTOR, MICRO 270 5%
1-408-427-00	s INDUCTOR, MICRO 330 5%
1-408-428-00	s INDUCTOR, MICRO 390 5%
1-408-429-00	s INDUCTOR, MICRO 470 5%

AD-44 BOARD

(AD-44 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
	This board includes the DUS-311 board.	
1pc	A-6257-273-A	o MOUNTED CIRCUIT BOARD, AD-44P
1pc	1-632-547-11	o PRINTED CIRCUIT BOARD, DUS-311
1pc	2-139-140-01	o PLATE, SHIELD
1pc	2-139-183-01	o SPACER
2pcs	2-182-909-01	o LEVER, PC BOARD
1pc	7-621-759-35	s +PSW, 2.6X5
2pcs	7-626-320-11	o PIN, SPRING 3X8
6pcs	7-682-947-01	s SCREW +PSW 3X6
1pc	7-684-023-04	s N 3, TYPE 2
6pcs	7-685-546-19	s SCREW +BTP 3X8 TYPE2 N-S
C1	1-124-598-11	s ELECT 22uF 20% 25V
C1	1-124-598-11	s ELECT 47uF 20% 16V
C2	1-124-598-11	s ELECT 22uF 20% 25V
C3	1-124-598-11	s ELECT 22uF 20% 25V
C3	1-130-487-00	s MYLAR 0.022uF 5% 50V
C4	1-130-487-00	s MYLAR 0.022uF 5% 50V
C5	1-124-598-11	s ELECT 22uF 20% 25V
C8	1-107-085-00	s MICA 100PF 5% 50V
C9	1-161-485-00	s CERAMIC 0.1uF 50V
C10	1-161-900-11	s CERAMIC 1uF 50V
C12	1-124-598-11	s ELECT 22uF 20% 25V
C13	1-124-598-11	s ELECT 22uF 20% 25V
C15	1-124-598-11	s ELECT 22uF 20% 25V
C16	1-124-598-11	s ELECT 22uF 20% 25V
C17	1-124-598-11	s ELECT 22uF 20% 25V
C18	1-107-085-00	s MICA 100PF 5% 50V
C19	1-162-726-11	s CERAMIC 470PF 1% 50V
C20	1-124-598-11	s ELECT 22uF 20% 25V
C22	1-161-485-00	s CERAMIC 0.1uF 50V
C23	1-162-726-11	s CERAMIC 470PF 1% 50V
C24	1-130-491-00	s MYLAR 0.047uF 5% 50V
C25	1-164-139-11	s CERAMIC 510PF 5% 50V
C26	1-130-474-00	s MYLAR 0.0018uF 5% 50V
C28	1-162-718-11	s CERAMIC 220PF 1% 50V
C29	1-161-485-00	s CERAMIC 0.1uF 50V
C31	1-161-485-00	s CERAMIC 0.1uF 50V
C32	1-161-485-00	s CERAMIC 0.1uF 50V
C33	1-124-638-11	s ELECT 22uF 20% 10V
C34	1-124-598-11	s ELECT 22uF 20% 25V
C35	1-124-598-11	s ELECT 22uF 20% 25V
C36	1-124-598-11	s ELECT 22uF 20% 25V
C38	1-124-598-11	s ELECT 22uF 20% 25V
C41	1-107-085-00	s MICA 100PF 5% 50V
C42	1-161-485-00	s CERAMIC 0.1uF 50V
C43	1-161-900-11	s CERAMIC 1uF 50V
C45	1-124-598-11	s ELECT 22uF 20% 25V
C46	1-124-598-11	s ELECT 22uF 20% 25V
C48	1-124-598-11	s ELECT 22uF 20% 25V
C49	1-124-598-11	s ELECT 22uF 20% 25V
C50	1-124-598-11	s ELECT 22uF 20% 25V
C51	1-107-085-00	s MICA 100PF 5% 50V
C52	1-162-726-11	s CERAMIC 470PF 1% 50V
C53	1-124-598-11	s ELECT 22uF 20% 25V
C54	1-161-485-00	s CERAMIC 0.1uF 50V
C55	1-130-491-00	s MYLAR 0.047uF 5% 50V
C56	1-162-726-11	s CERAMIC 470PF 1% 50V
C57	1-164-139-11	s CERAMIC 510PF 5% 50V

Ref. No. or Q'ty	Part No.	SP Description
C58	1-130-474-00	s MYLAR 0.0018uF 5% 50V
C61	1-162-718-11	s CERAMIC 220PF 1% 50V
C62	1-161-485-00	s CERAMIC 0.1uF 50V
C64	1-161-485-00	s CERAMIC 0.1uF 50V
C65	1-161-485-00	s CERAMIC 0.1uF 50V
C66	1-124-638-11	s ELECT 22uF 20% 10V
C77	1-124-598-11	s ELECT 22uF 20% 25V
C78	1-124-598-11	s ELECT 22uF 20% 25V
C79	1-124-598-11	s ELECT 22uF 20% 25V
C80	1-124-598-11	s ELECT 22uF 20% 25V
C81	1-124-598-11	s ELECT 22uF 20% 25V
C82	1-124-598-11	s ELECT 22uF 20% 25V
C87	1-126-094-11	s ELECT 4.7uF 20% 35V
C91	1-107-202-00	s MICA 10PF 5% 500V
C92	1-107-085-00	s MICA 100PF 5% 50V
C97	1-107-047-00	s MICA 5.6PF 500V
C98	1-107-208-00	s MICA 18PF 5% 500V
C104	1-161-897-11	s CERAMIC 0.33uF 50V
C105	1-107-085-00	s MICA 100PF 5% 50V
C106	1-107-075-00	s MICA 39PF 5% 50V
C107	1-107-075-00	s MICA 39PF 5% 50V
C108	1-124-598-11	s ELECT 22uF 20% 25V
C111	1-130-491-00	s MYLAR 0.047uF 5% 50V
C112	1-126-096-11	s ELECT 10uF 20% 35V
C114	1-161-900-11	s CERAMIC 1uF 50V
C115	1-161-485-00	s CERAMIC 0.1uF 50V
C123	1-107-210-00	s MICA 22PF 5% 500V
C124	1-126-096-11	s ELECT 10uF 20% 35V
C132	1-161-485-00	s CERAMIC 0.1uF 50V
C135	1-107-210-00	s MICA 22PF 5% 500V
C136	1-130-483-00	s MYLAR 0.01uF 5% 50V
C141	1-124-598-11	s ELECT 22uF 20% 25V
C142	1-107-036-00	s MICA 68PF 5% 500V
C143	1-161-888-11	s CERAMIC 0.01uF 50V
C146	1-130-483-00	s MYLAR 0.01uF 5% 50V
C147	1-161-897-11	s CERAMIC 0.33uF 50V
C148	1-161-900-11	s CERAMIC 1uF 50V
C149	1-130-483-00	s MYLAR 0.01uF 5% 50V
C150	1-107-210-00	s MICA 22PF 5% 500V
C151	1-107-211-00	s MICA 24PF 5% 500V
C152	1-130-491-00	s MYLAR 0.047uF 5% 50V
C153	1-130-491-00	s MYLAR 0.047uF 5% 50V
C154	1-161-898-11	s CERAMIC 0.47uF 50V
C155	1-107-042-00	s MICA 2.2PF 500V
C156	1-161-485-00	s CERAMIC 0.1uF 50V
C157	1-124-598-11	s ELECT 22uF 20% 25V
C158	1-124-598-11	s ELECT 22uF 20% 25V
C159	1-124-598-11	s ELECT 22uF 20% 25V
C160	1-124-598-11	s ELECT 22uF 20% 25V
C163	1-131-349-00	s TANTALUM 2.2uF 10% 35V
C164	1-126-096-11	s ELECT 10uF 20% 35V
C165	1-107-042-00	s MICA 2.2PF 500V
C166	1-126-096-11	s ELECT 10uF 20% 35V
C167	1-126-096-11	s ELECT 10uF 20% 35V
C168	1-107-042-00	s MICA 2.2PF 500V
C169	1-126-096-11	s ELECT 10uF 20% 35V
C172	1-161-485-00	s CERAMIC 0.1uF 50V
C176	1-107-075-00	s MICA 39PF 5% 50V
C177	1-124-598-11	s ELECT 22uF 20% 25V

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

(AD-44 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C178	1-124-598-11	s ELECT 22uF 20% 25V
C179	1-124-598-11	s ELECT 22uF 20% 25V
C180	1-124-598-11	s ELECT 22uF 20% 25V
C183	1-131-349-00	s TANTALUM 2.2uF 10% 35V
C184	1-126-096-11	s ELECT 10uF 20% 35V
C185	1-107-042-00	s MICA 2.2PF 500V
C186	1-126-096-11	s ELECT 10uF 20% 35V
C187	1-126-096-11	s ELECT 10uF 20% 35V
C188	1-107-042-00	s MICA 2.2PF 500V
C189	1-126-096-11	s ELECT 10uF 20% 35V
C192	1-161-485-00	s CERAMIC 0.1uF 50V
C195	1-124-598-11	s ELECT 22uF 20% 25V
C196	1-124-598-11	s ELECT 22uF 20% 25V
C197	1-124-598-11	s ELECT 22uF 20% 25V
C198	1-124-598-11	s ELECT 22uF 20% 25V
C201	1-131-349-00	s TANTALUM 2.2uF 10% 35V
C202	1-126-096-11	s ELECT 10uF 20% 35V
C203	1-107-042-00	s MICA 2.2PF 500V
C204	1-126-096-11	s ELECT 10uF 20% 35V
C205	1-126-096-11	s ELECT 10uF 20% 35V
C206	1-107-042-00	s MICA 2.2PF 500V
C207	1-126-096-11	s ELECT 10uF 20% 35V
C210	1-161-485-00	s CERAMIC 0.1uF 50V
C222	1-124-598-11	s ELECT 22uF 20% 25V
C223	1-107-085-00	s MICA 100PF 5% 50V
C231	1-109-635-00	s MICA 680PF 5% 500V
C236	1-107-210-00	s MICA 22PF 5% 500V
C237	1-107-210-00	s MICA 22PF 5% 500V
C240	1-124-598-11	s ELECT 22uF 20% 25V
C241	1-124-598-11	s ELECT 22uF 20% 25V
C243	1-124-598-11	s ELECT 22uF 20% 25V
CN13	1-506-747-11	s CONNECTOR, DIN 64P, MALE
CN14	1-506-747-11	s CONNECTOR, DIN 64P, MALE
CN15	1-506-747-11	s CONNECTOR, DIN 64P, MALE
COP1	1-565-413-11	o PLUG, SHORTING
COP2	1-565-413-11	o PLUG, SHORTING
COR1	1-566-388-11	o CONNECTOR, 8P, MALE
COR2	1-566-388-11	o CONNECTOR, 8P, MALE
D1	8-719-911-19	s DIODE 1SS119
D2	8-719-911-19	s DIODE 1SS119
D3	8-719-104-10	s DIODE 1SS99
D4	8-719-911-19	s DIODE 1SS119
D5	8-719-911-19	s DIODE 1SS119
D6	8-719-104-10	s DIODE 1SS99
D7	8-719-911-19	s DIODE 1SS119
D8	8-719-911-19	s DIODE 1SS119
D9	8-719-911-19	s DIODE 1SS119
D10	8-719-110-13	s DIODE RD9.1ES-B2
D12	8-719-109-68	s DIODE RD3.6ES-T1B1
D13	8-719-911-19	s DIODE 1SS119
D14	8-719-911-19	s DIODE 1SS119
D15	8-719-911-19	s DIODE 1SS119
D16	8-719-911-19	s DIODE 1SS119
D17	8-719-911-19	s DIODE 1SS119
D18	8-719-911-19	s DIODE 1SS119
D19	8-719-911-19	s DIODE 1SS119
D20	8-719-911-19	s DIODE 1SS119

(AD-44 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
D21	8-719-911-19	s DIODE 1SS119
DL1	1-415-122-91	s DELAY LINE, 1H (PAL)
FL1	1-235-268-00	s MODULE
FL2	1-235-841-11	s FILTER, LOW-PASS
FL3	1-235-841-11	s FILTER, LOW-PASS
FL4	1-235-841-11	s FILTER, LOW-PASS
IC1	8-759-710-07	s IC NJM2234M
IC1	8-759-907-81	s IC SN74LS221NS
IC2	8-759-908-17	s IC TL082CPS
IC2	8-759-922-49	s IC SN74LS74ANS
IC3	8-759-206-28	s IC TC74HC123F
IC3	8-759-922-49	s IC SN74LS74ANS
IC4	8-759-922-49	s IC SN74LS74ANS
IC4	8-759-927-46	s IC SN74HCOONS
IC5	8-759-710-09	s IC NJM2233AM
IC6	8-759-201-47	s IC TA7357AP
IC7	8-759-925-76	s IC SN74HCO8NS
IC8	8-759-902-88	s IC SN74LS123NS
IC9	8-759-925-74	s IC SN74HCO4NS
IC10	8-759-105-49	s IC UPC319G2
IC11	8-759-972-26	s IC LM1881N
IC12	8-759-926-24	s IC SN74HC164NS
IC13	8-759-927-46	s IC SN74HCOONS
IC14	8-759-710-07	s IC NJM2234M
IC15	8-759-710-09	s IC NJM2233AM
IC16	8-759-201-47	s IC TA7357AP
IC17	8-759-972-26	s IC LM1881N
IC18	8-759-925-74	s IC SN74HCO4NS
IC19	8-759-926-24	s IC SN74HC164NS
IC20	8-759-982-10	s IC RC7809FA
IC21	8-759-982-39	s IC RC7909FA
IC22	8-759-710-09	s IC NJM2233AM
IC23	8-759-710-09	s IC NJM2233AM
IC24	8-757-930-11	s IC CX7930A
IC25	8-759-929-79	s IC SN74LS05NS
IC26	8-759-907-81	s IC SN74LS221NS
IC27	8-759-934-11	s IC SN74ALS32NS
IC28	8-759-930-50	s IC SN74LS157NS
IC29	8-759-933-98	s IC SN74ALS08NS
IC30	8-759-140-94	s IC CXD1332P
IC31	8-759-934-20	s IC SN74ALS109ANS
IC32	8-759-989-56	s IC SN74ALS244BNS
IC33	8-759-902-88	s IC SN74LS123NS
IC34	8-759-701-96	s IC NJM2217L
IC35	8-759-922-49	s IC SN74LS74ANS
IC37	8-759-702-07	s IC NJM13700M
IC38	8-759-941-27	s IC MB4002PF
IC39	8-752-030-75	s IC V7020
IC40	8-759-710-09	s IC NJM2233AM
IC41	8-741-105-40	s IC BX-1054
IC42	8-752-031-11	s IC CXA1096P
IC43	8-759-934-60	s IC SN74ALS374NS
IC44	8-759-946-65	s IC SN74ALS04BNS
IC45	8-759-710-09	s IC NJM2233AM
IC46	8-741-105-40	s IC BX-1054
IC47	8-752-031-11	s IC CXA1096P
IC48	8-759-934-60	s IC SN74ALS374NS

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

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Ref. No. or Q'ty	Part No.	SP Description
IC49	8-759-710-09	s IC NJM2233AM
IC50	8-741-105-40	s IC BX-1054
IC51	8-752-031-11	s IC CXA1096P
IC52	8-759-934-60	s IC SN74ALS374NS
IC53	8-759-982-05	s IC RC7805FA
IC54	8-759-908-17	s IC TL082CPS
IC55	8-759-931-26	s IC SN74LS399NS
IC56	8-759-710-09	s IC NJM2233AM
IC57	8-759-710-09	s IC NJM2233AM
L1	1-410-470-11	s INDUCTOR 10uH
L1	1-410-470-11	s INDUCTOR 10uH
L2	1-410-470-11	s INDUCTOR 10uH
L3	1-410-470-11	s INDUCTOR 10uH
L5	1-410-470-11	s INDUCTOR 10uH
L6	1-410-470-11	s INDUCTOR 10uH
L7	1-410-470-11	s INDUCTOR 10uH
L10	1-410-470-11	s INDUCTOR 10uH
L11	1-410-470-11	s INDUCTOR 10uH
L12	1-410-470-11	s INDUCTOR 10uH
L13	1-410-476-11	s INDUCTOR 33uH
L14	1-410-470-11	s INDUCTOR 10uH
L15	1-410-470-11	s INDUCTOR 10uH
L16	1-410-470-11	s INDUCTOR 10uH
L17	1-410-470-11	s INDUCTOR 10uH
L18	1-410-470-11	s INDUCTOR 10uH
L19	1-410-470-11	s INDUCTOR 10uH
L20	1-410-470-11	s INDUCTOR 10uH
L21	1-410-470-11	s INDUCTOR 10uH
L22	1-410-470-11	s INDUCTOR 10uH
L23	1-410-470-11	s INDUCTOR 10uH
L25	1-410-470-11	s INDUCTOR 10uH
L26	1-410-470-11	s INDUCTOR 10uH
L34	1-410-470-11	s INDUCTOR 10uH
L35	1-410-470-11	s INDUCTOR 10uH
L36	1-410-470-11	s INDUCTOR 10uH
L37	1-410-476-11	s INDUCTOR 33uH
LV1	1-425-928-00	s TRANSFORMER, DELAY ADJUSTING
Q1	8-729-119-78	s TRANSISTOR 2SC2603-E
Q2	8-729-119-78	s TRANSISTOR 2SC2603-E
Q3	8-729-119-76	s TRANSISTOR 2SA1115P
Q4	8-729-119-78	s TRANSISTOR 2SC2603-E
Q5	8-729-119-78	s TRANSISTOR 2SC2603-E
Q6	8-729-119-78	s TRANSISTOR 2SC2603-E
Q7	8-729-119-76	s TRANSISTOR 2SA1115P
Q8	8-729-119-78	s TRANSISTOR 2SC2603-E
Q10	8-729-119-78	s TRANSISTOR 2SC2603-E
Q11	8-729-119-78	s TRANSISTOR 2SC2603-E
Q12	8-729-119-78	s TRANSISTOR 2SC2603-E
Q13	8-729-119-76	s TRANSISTOR 2SA1115P
Q14	8-729-119-78	s TRANSISTOR 2SC2603-E
Q15	8-729-190-12	s TRANSISTOR 2SC2901
Q16	8-729-190-12	s TRANSISTOR 2SC2901
Q17	8-729-190-12	s TRANSISTOR 2SC2901
Q19	8-729-119-78	s TRANSISTOR 2SC2603-E
Q20	8-729-119-78	s TRANSISTOR 2SC2603-E
Q21	8-729-119-78	s TRANSISTOR 2SC2603-E
Q22	8-729-119-76	s TRANSISTOR 2SA1115P

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Ref. No. or Q'ty	Part No.	SP Description
Q23	8-729-119-78	s TRANSISTOR 2SC2603-E
Q24	8-729-105-47	s TRANSISTOR 2SC2026-L
Q25	8-729-105-47	s TRANSISTOR 2SC2026-L
Q30	8-729-119-78	s TRANSISTOR 2SC2603-E
Q31	8-729-119-78	s TRANSISTOR 2SC2603-E
Q32	8-729-119-78	s TRANSISTOR 2SC2603-E
Q33	8-729-119-78	s TRANSISTOR 2SC2603-E
Q34	8-729-119-78	s TRANSISTOR 2SC2603-E
Q35	8-729-119-76	s TRANSISTOR 2SA1115P
Q36	8-729-119-78	s TRANSISTOR 2SC2603-E
Q37	8-729-119-78	s TRANSISTOR 2SC2603-E
Q38	8-729-119-78	s TRANSISTOR 2SC2603-E
Q39	8-729-119-78	s TRANSISTOR 2SC2603-E
Q40	8-729-119-78	s TRANSISTOR 2SC2603-E
Q41	8-729-119-78	s TRANSISTOR 2SC2603-E
Q42	8-729-119-78	s TRANSISTOR 2SC2603-E
Q43	8-729-119-78	s TRANSISTOR 2SC2603-E
Q44	8-729-800-43	s TRANSISTOR 2SK152-3
Q45	8-729-800-43	s TRANSISTOR 2SK152-3
Q46	8-729-119-76	s TRANSISTOR 2SA1115P
Q47	8-729-119-76	s TRANSISTOR 2SA1115P
Q48	8-729-119-78	s TRANSISTOR 2SC2603-E
Q49	8-729-119-78	s TRANSISTOR 2SC2603-E
Q50	8-729-119-78	s TRANSISTOR 2SC2603-E
Q51	8-729-119-78	s TRANSISTOR 2SC2603-E
Q52	8-729-119-76	s TRANSISTOR 2SA1115P
Q53	8-729-119-78	s TRANSISTOR 2SC2603-E
Q54	8-729-119-76	s TRANSISTOR 2SA1115P
Q55	8-729-119-76	s TRANSISTOR 2SA1115P
Q56	8-729-119-78	s TRANSISTOR 2SC2603-E
Q57	8-729-190-12	s TRANSISTOR 2SC2901
Q58	8-729-119-78	s TRANSISTOR 2SC2603-E
Q59	8-729-119-78	s TRANSISTOR 2SC2603-E
Q60	8-729-119-76	s TRANSISTOR 2SA1115P
Q61	8-729-119-78	s TRANSISTOR 2SC2603-E
Q62	8-729-119-76	s TRANSISTOR 2SA1115P
Q63	8-729-119-76	s TRANSISTOR 2SA1115P
Q64	8-729-119-78	s TRANSISTOR 2SC2603-E
Q65	8-729-190-12	s TRANSISTOR 2SC2901
Q66	8-729-119-78	s TRANSISTOR 2SC2603-E
Q67	8-729-119-78	s TRANSISTOR 2SC2603-E
Q68	8-729-119-76	s TRANSISTOR 2SA1115P
Q69	8-729-119-78	s TRANSISTOR 2SC2603-E
Q70	8-729-119-76	s TRANSISTOR 2SA1115P
Q71	8-729-119-76	s TRANSISTOR 2SA1115P
Q72	8-729-119-78	s TRANSISTOR 2SC2603-E
Q73	8-729-190-12	s TRANSISTOR 2SC2901
Q74	8-729-119-78	s TRANSISTOR 2SC2603-E
Q75	8-729-119-76	s TRANSISTOR 2SA1115P
Q76	8-729-119-76	s TRANSISTOR 2SA1115P
Q77	8-729-190-12	s TRANSISTOR 2SC2901
Q78	8-729-119-78	s TRANSISTOR 2SC2603-E
R1	1-247-804-11	s CARBON 75 5% 1/4W
R2	1-247-804-11	s CARBON 75 5% 1/4W
R3	1-247-804-11	s CARBON 75 5% 1/4W
R8	1-215-445-00	s METAL 10K 1% 1/6W
R9	1-215-399-00	s METAL 120 1% 1/6W
R22	1-215-447-00	s METAL 12K 1% 1/6W

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

(AD-44 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R23	1-215-467-00	s METAL 82K 1% 1/6W
R26	1-215-466-00	s METAL 75K 1% 1/6W
R30	1-215-437-00	s METAL 4.7K 1% 1/6W
R31	1-215-445-00	s METAL 10K 1% 1/6W
R32	1-215-435-00	s METAL 3.9K 1% 1/6W
R39	1-215-445-00	s METAL 10K 1% 1/6W
R40	1-215-399-00	s METAL 120 1% 1/6W
R53	1-215-447-00	s METAL 12K 1% 1/6W
R54	1-215-467-00	s METAL 82K 1% 1/6W
R57	1-215-466-00	s METAL 75K 1% 1/6W
R62	1-215-445-00	s METAL 10K 1% 1/6W
R63	1-215-435-00	s METAL 3.9K 1% 1/6W
R66	1-247-854-11	s CARBON 9.1K 5% 1/4W
R68	1-247-854-11	s CARBON 9.1K 5% 1/4W
R71	1-215-445-00	s METAL 10K 1% 1/6W
R72	1-215-445-00	s METAL 10K 1% 1/6W
R75	1-247-804-11	s CARBON 75 5% 1/4W
R76	1-247-903-00	s CARBON 1M 5% 1/4W
R89	1-247-804-11	s CARBON 75 5% 1/4W
R93	1-247-804-11	s CARBON 75 5% 1/4W
R97	1-247-804-11	s CARBON 75 5% 1/4W
R110	1-247-808-11	s CARBON 110 5% 1/4W
R111	1-247-808-11	s CARBON 110 5% 1/4W
R112	1-247-804-11	s CARBON 75 5% 1/4W
R113	1-247-804-11	s CARBON 75 5% 1/4W
R114	1-247-804-11	s CARBON 75 5% 1/4W
R116	1-215-459-00	s METAL 39K 1% 1/6W
R130	1-216-373-11	s METAL 2.2 5% 2W
R131	1-216-377-11	s METAL 4.7 5% 2W
R132	1-247-804-11	s CARBON 75 5% 1/4W
R144	1-215-421-00	s METAL 1K 1% 1/6W
R145	1-215-400-00	s METAL 130 1% 1/6W
R146	1-215-419-00	s METAL 820 1% 1/6W
R152	1-247-804-11	s CARBON 75 5% 1/4W
R155	1-215-413-00	s METAL 470 1% 1/6W
R156	1-215-439-00	s METAL 5.6K 1% 1/6W
R157	1-215-427-00	s METAL 1.8K 1% 1/6W
R158	1-215-390-00	s METAL 51 1% 1/6W
R159	1-215-435-00	s METAL 3.9K 1% 1/6W
R160	1-215-398-00	s METAL 110 1% 1/6W
R170	1-247-804-11	s CARBON 75 5% 1/4W
R173	1-215-417-00	s METAL 680 1% 1/6W
R174	1-215-393-00	s METAL 68 1% 1/6W
R175	1-215-421-00	s METAL 1K 1% 1/6W
R194	1-215-422-00	s METAL 1.1K 1% 1/6W
R195	1-215-389-00	s METAL 47 1% 1/6W
R207	1-215-433-00	s METAL 3.3K 1% 1/6W
R208	1-215-439-00	s METAL 5.6K 1% 1/6W
R211	1-215-423-00	s METAL 1.2K 1% 1/6W
R212	1-215-429-00	s METAL 2.2K 1% 1/6W
R213	1-215-441-00	s METAL 6.8K 1% 1/6W
R216	1-215-461-00	s METAL 47K 1% 1/6W
R230	1-215-428-00	s METAL 2K 1% 1/6W
R231	1-215-428-00	s METAL 2K 1% 1/6W
R256	1-215-428-00	s METAL 2K 1% 1/6W
R257	1-215-428-00	s METAL 2K 1% 1/6W
R281	1-215-428-00	s METAL 2K 1% 1/6W
R282	1-215-428-00	s METAL 2K 1% 1/6W
R301	1-215-881-11	s METAL 15 5% 2W

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Ref. No. or Q'ty	Part No.	SP Description
R304	1-215-469-00	s METAL 100K 1% 1/6W
R305	1-215-425-00	s METAL 1.5K 1% 1/6W
R306	1-215-443-00	s METAL 8.2K 1% 1/6W
R309	1-215-444-00	s METAL 9.1K 1% 1/6W
R310	1-215-439-00	s METAL 5.6K 1% 1/6W
R321	1-247-804-11	s CARBON 75 5% 1/4W
R336	1-215-430-00	s METAL 2.4K 1% 1/6W
R337	1-215-448-00	s METAL 13K 1% 1/6W
R338	1-215-438-00	s METAL 5.1K 1% 1/6W
RV1	1-228-459-00	s RES, ADJ, METAL 10K
RV1	1-230-523-11	s RES, ADJ, METAL 10K
RV2	1-228-459-00	s RES, ADJ, METAL 10K
RV2	1-230-522-11	s RES, ADJ, METAL 4.7K
RV3	1-230-523-11	s RES, ADJ, METAL 10K
RV4	1-230-522-11	s RES, ADJ, METAL 4.7K
RV6	1-230-519-11	s RES, ADJ, METAL 470
RV8	1-230-521-11	s RES, ADJ, METAL 2.2K
RV9	1-230-526-11	s RES, ADJ, METAL 47K
RV12	1-228-452-00	s RES, ADJ, CERMET 50
RV13	1-230-519-11	s RES, ADJ, METAL 470
RV14	1-230-519-11	s RES, ADJ, METAL 470
RV15	1-230-519-11	s RES, ADJ, METAL 470
RV16	1-230-519-11	s RES, ADJ, METAL 470
RV17	1-237-503-21	s RES, ADJ, METAL 10K
RV18	1-230-521-11	s RES, ADJ, METAL 2.2K
RV20	1-228-455-00	s RES, ADJ, METAL 500
RV21	1-230-523-11	s RES, ADJ, METAL 10K
RV22	1-230-522-11	s RES, ADJ, METAL 4.7K
RV23	1-230-519-11	s RES, ADJ, METAL 470
RV24	1-230-519-11	s RES, ADJ, METAL 470
RV25	1-230-519-11	s RES, ADJ, METAL 470
RV26	1-230-520-11	s RES, ADJ, METAL 1K
RV27	1-230-520-11	s RES, ADJ, METAL 1K
RV28	1-230-522-11	s RES, ADJ, METAL 4.7K
RV29	1-230-522-11	s RES, ADJ, METAL 4.7K
RV31	1-230-519-11	s RES, ADJ, METAL 470
RV32	1-228-457-00	s RES, ADJ, METAL 2K
RV33	1-228-457-00	s RES, ADJ, METAL 2K
S1	1-554-883-11	s SWITCH, SLIDE
S2	1-554-796-11	s SWITCH, SLIDE
S3	1-554-883-11	s SWITCH, SLIDE
X1	1-577-295-11	s OSCILLATOR, CRYSTAL
X2	1-577-294-11	s OSCILLATOR, CRYSTAL
X4	1-527-723-00	s VIBRATOR, CRYSTAL
X6	1-567-504-11	s OSCILLATOR, CRYSTAL

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

CN-231 BOARD

Ref. No. or Q'ty	Part No.	SP Description
4pcs	1-630-845-11	o PRINTED CIRCUIT BOARD, CN-231
3pcs	1-563-354-31	s CONNECTOR, BNC
CN1	1-506-485-11	s PIN CONNECTOR, 6P

DA-33 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-6257-274-A	o MOUNTED CIRCUIT BOARD, DA-33P
1pc	2-139-140-01	o PLATE, SHIELD
2pcs	2-182-909-01	o LEVER, PC BOARD
2pcs	7-626-320-11	o PIN, SPRING 3X8
7pcs	7-682-947-01	s SCREW +PSW 3X6
6pcs	7-685-546-19	s SCREW +BTP 3X8 TYPE2 N-S
C1	1-161-897-11	s CERAMIC 0.33uF 50V
C6	1-130-491-00	s MYLAR 0.047uF 5% 50V
C7	1-126-096-11	s ELECT 10uF 20% 35V
C8	1-130-471-00	s MYLAR 0.001uF 5% 50V
C9	1-107-085-00	s MICA 100PF 5% 50V
C10	1-130-471-00	s MYLAR 0.001uF 5% 50V
C11	1-107-075-00	s MICA 39PF 5% 50V
C12	1-107-075-00	s MICA 39PF 5% 50V
C19	1-124-242-00	s ELECT 33uF 20% 25V
C20	1-161-485-00	s CERAMIC 0.1uF 50V
C31	1-124-242-00	s ELECT 33uF 20% 25V
C32	1-161-485-00	s CERAMIC 0.1uF 50V
C53	1-161-485-00	s CERAMIC 0.1uF 50V
C57	1-161-897-11	s CERAMIC 0.33uF 50V
C58	1-161-900-11	s CERAMIC 1uF 50V
C59	1-107-210-00	s MICA 22PF 5% 500V
C60	1-130-483-00	s MYLAR 0.01uF 5% 50V
C61	1-107-211-00	s MICA 24PF 5% 500V
C62	1-130-483-00	s MYLAR 0.01uF 5% 50V
C65	1-161-898-11	s CERAMIC 0.47uF 50V
C66	1-130-491-00	s MYLAR 0.047uF 5% 50V
C67	1-161-485-00	s CERAMIC 0.1uF 50V
C68	1-161-485-00	s CERAMIC 0.1uF 50V
C72	1-124-598-11	s ELECT 22uF 20% 25V
C73	1-130-483-00	s MYLAR 0.01uF 5% 50V
C76	1-107-036-00	s MICA 68PF 5% 500V
C77	1-107-048-00	s MICA 6.8PF 500V
C78	1-107-202-00	s MICA 10PF 5% 500V
C79	1-126-096-11	s ELECT 10uF 20% 35V
C80	1-126-162-11	s ELECT 3.3uF 20% 50V
C84	1-107-210-00	s MICA 22PF 5% 500V
C85	1-130-491-00	s MYLAR 0.047uF 5% 50V
C92	1-131-351-00	s TANTALUM 4.7uF 10% 35V
C93	1-131-351-00	s TANTALUM 4.7uF 10% 35V
C94	1-131-351-00	s TANTALUM 4.7uF 10% 35V
C95	1-124-598-11	s ELECT 22uF 20% 25V
C96	1-161-485-00	s CERAMIC 0.1uF 50V
C97	1-107-046-00	s MICA 4.7PF 500V
C98	1-107-042-00	s MICA 2.2PF 500V
C99	1-107-046-00	s MICA 4.7PF 500V
C100	1-107-044-00	s MICA 3.3PF 500V
C101	1-130-483-00	s MYLAR 0.01uF 5% 50V
C102	1-107-048-00	s MICA 6.8PF 500V
C103	1-107-036-00	s MICA 68PF 5% 500V
C108	1-126-096-11	s ELECT 10uF 20% 35V
C110	1-126-096-11	s ELECT 10uF 20% 35V
C112	1-126-096-11	s ELECT 10uF 20% 35V
C114	1-124-598-11	s ELECT 22uF 20% 25V
C115	1-126-096-11	s ELECT 10uF 20% 35V
C116	1-131-345-00	s TANTALUM 0.47uF 10% 35V
C117	1-161-485-00	s CERAMIC 0.1uF 50V
C118	1-126-096-11	s ELECT 10uF 20% 35V

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

(DA-33 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C120	1-161-485-00	s CERAMIC 0.1uF 50V
C121	1-124-598-11	s ELECT 22uF 20% 25V
C122	1-161-485-00	s CERAMIC 0.1uF 50V
C124	1-124-438-00	s ELECT 1uF 20% 50V
C125	1-126-096-11	s ELECT 10uF 20% 35V
C126	1-126-096-11	s ELECT 10uF 20% 35V
C129	1-124-598-11	s ELECT 22uF 20% 25V
C130	1-131-345-00	s TANTALUM 0.47uF 10% 35V
C131	1-161-485-00	s CERAMIC 0.1uF 50V
C132	1-130-483-00	s MYLAR 0.01uF 5% 50V
C133	1-126-096-11	s ELECT 10uF 20% 35V
C135	1-126-096-11	s ELECT 10uF 20% 35V
C136	1-162-712-11	s CERAMIC 120PF 1% 50V
C137	1-107-165-00	s MICA 56PF 5% 50V
C138	1-130-483-00	s MYLAR 0.01uF 5% 50V
C139	1-130-483-00	s MYLAR 0.01uF 5% 50V
C140	1-107-208-00	s MICA 18PF 5% 500V
C141	1-130-483-00	s MYLAR 0.01uF 5% 50V
C142	1-107-036-00	s MICA 68PF 5% 500V
C147	1-124-438-00	s ELECT 1uF 20% 50V
C148	1-107-085-00	s MICA 100PF 5% 50V
C149	1-124-598-11	s ELECT 22uF 20% 25V
C151	1-130-491-00	s MYLAR 0.047uF 5% 50V
C155	1-107-046-00	s MICA 4.7PF 500V
C156	1-107-042-00	s MICA 2.2PF 500V
C157	1-126-096-11	s ELECT 10uF 20% 35V
C158	1-107-046-00	s MICA 4.7PF 500V
C159	1-107-042-00	s MICA 2.2PF 500V
C160	1-126-096-11	s ELECT 10uF 20% 35V
C161	1-107-046-00	s MICA 4.7PF 500V
C162	1-107-042-00	s MICA 2.2PF 500V
C168	1-130-471-00	s MYLAR 0.001uF 5% 50V
C169	1-107-210-00	s MICA 22PF 5% 500V
C170	1-161-888-11	s CERAMIC 0.01uF 50V
C171	1-107-042-00	s MICA 2.2PF 500V
C172	1-107-159-00	s MICA 33PF 5% 500V
C173	1-107-159-00	s MICA 33PF 5% 500V
C174	1-107-159-00	s MICA 33PF 5% 500V
C175	1-107-159-00	s MICA 33PF 5% 500V
C179	1-126-094-11	s ELECT 4.7uF 20% 35V
C180	1-107-202-00	s MICA 10PF 5% 500V
C200	1-102-110-00	s CERAMIC 220PF 50V
C201	1-107-157-00	s MICA 27PF 5% 500V
CN10	1-506-747-11	s CONNECTOR, DIN 64P, MALE
CN11	1-506-747-11	s CONNECTOR, DIN 64P, MALE
CN12	1-506-747-11	s CONNECTOR, DIN 64P, MALE
COP1	1-565-413-11	o PLUG, SHORTING
COR1	1-566-388-11	o CONNECTOR, 8P, MALE
D1	8-719-911-19	s DIODE 1SS119
D2	8-719-911-19	s DIODE 1SS119
D3	8-719-911-19	s DIODE 1SS119
D4	8-719-911-19	s DIODE 1SS119
D5	8-719-109-68	s DIODE RD3.6ES-T1B1
D6	8-719-109-71	s DIODE RD3.9ES-T1B1
D7	8-719-110-21	s DIODE RD11ES-T1B1
D10	8-719-109-71	s DIODE RD3.9ES-T1B1
D11	8-719-110-21	s DIODE RD11ES-T1B1

(DA-33 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
D12	8-719-911-19	s DIODE 1SS119
D13	8-719-911-19	s DIODE 1SS119
DL1	1-415-122-91	s DELAY LINE, 1H (PAL)
FL1	1-235-268-00	s MODULE
FL2	1-236-057-11	s FILTER, LOW PASS
FL3	1-235-181-00	s FILTER, BANDPASS 4.43MHz
FL4	1-236-057-11	s FILTER, LOW PASS
FL5	1-236-057-11	s FILTER, LOW PASS
IC1	8-759-907-81	s IC SN74LS221NS
IC2	8-759-929-99	s IC SN74LS32NS
IC3	8-759-929-78	s IC SN74LS04NS
IC4	8-759-930-29	s IC SN74LS109ANS
IC5	8-759-930-50	s IC SN74LS157NS
IC6	8-759-989-56	s IC SN74ALS244BNS
IC7	8-759-922-49	s IC SN74LS74ANS
IC8	8-759-934-20	s IC SN74ALS109ANS
IC9	8-759-902-88	s IC SN74LS123NS
IC10	8-759-907-81	s IC SN74LS221NS
IC11	8-757-930-11	s IC CX7930A
IC12	8-759-933-98	s IC SN74ALS08NS
IC13	8-759-934-11	s IC SN74ALS32NS
IC14	8-759-140-94	s IC CXD1332P
IC15	8-759-989-56	s IC SN74ALS244BNS
IC16	8-759-934-60	s IC SN74ALS374NS
IC17	8-759-934-60	s IC SN74ALS374NS
IC18	8-759-934-60	s IC SN74ALS374NS
IC19	8-752-020-60	s IC CX20206
IC20	8-759-982-05	s IC RC7805FA
IC21	8-752-032-96	s IC CXA1106M
IC22	8-759-934-60	s IC SN74ALS374NS
IC23	8-759-982-10	s IC RC7809FA
IC24	8-759-982-39	s IC RC7909FA
IC25	8-759-929-80	s IC SN74LS08NS
IC26	8-752-030-75	s IC V7020
IC27	8-759-941-27	s IC MB4002PF
IC28	8-759-702-07	s IC NJM13700M
IC29	8-759-602-06	s IC M5109P
IC30	8-741-105-40	s IC BX-1054
IC32	8-759-908-17	s IC TL082CPS
IC33	8-759-906-59	s IC CX22017
IC34	8-741-133-91	s IC BX-1339A
IC35	8-759-702-07	s IC NJM13700M
IC36	8-759-908-15	s IC TL431CLP
IC37	8-759-982-44	s IC RC79L05A
IC38	8-741-135-60	s IC BX1356
IC39	8-741-135-60	s IC BX1356
IC40	8-741-135-60	s IC BX1356
IC41	8-759-907-81	s IC SN74LS221NS
L1	1-410-470-11	s INDUCTOR 10uH
L2	1-410-470-11	s INDUCTOR 10uH
L3	1-410-470-11	s INDUCTOR 10uH
L4	1-410-470-11	s INDUCTOR 10uH
L5	1-410-470-11	s INDUCTOR 10uH
L6	1-410-470-11	s INDUCTOR 10uH
L7	1-410-470-11	s INDUCTOR 10uH
L8	1-410-470-11	s INDUCTOR 10uH
L10	1-410-470-11	s INDUCTOR 10uH
L11	1-410-470-11	s INDUCTOR 10uH

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

(DA-33 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
L12	1-410-470-11 s	INDUCTOR 10uH
L14	1-410-470-11 s	INDUCTOR 10uH
L16	1-410-470-11 s	INDUCTOR 10uH
L17	1-410-470-11 s	INDUCTOR 10uH
L18	1-410-470-11 s	INDUCTOR 10uH
L19	1-410-470-11 s	INDUCTOR 10uH
L21	1-410-470-11 s	INDUCTOR 10uH
L22	1-410-470-11 s	INDUCTOR 10uH
L27	1-410-470-11 s	INDUCTOR 10uH
L28	1-410-470-11 s	INDUCTOR 10uH
L29	1-410-470-11 s	INDUCTOR 10uH
L30	1-410-470-11 s	INDUCTOR 10uH
L31	1-410-470-11 s	INDUCTOR 10uH
L33	1-410-470-11 s	INDUCTOR 10uH
L34	1-410-470-11 s	INDUCTOR 10uH
L35	1-410-470-11 s	INDUCTOR 10uH
LV1	1-425-928-00 s	TRANSFORMER, DELAY ADJUSTING
LV2	1-407-570-00 s	COIL, VARIABLE 15uH
Q1	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q2	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q3	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q4	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q5	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q6	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q7	8-729-119-76 s	TRANSISTOR 2SA1115P
Q8	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q9	8-729-800-43 s	TRANSISTOR 2SK152-3
Q10	8-729-800-43 s	TRANSISTOR 2SK152-3
Q11	8-729-119-76 s	TRANSISTOR 2SA1115P
Q12	8-729-119-76 s	TRANSISTOR 2SA1115P
Q13	8-729-119-76 s	TRANSISTOR 2SA1115P
Q14	8-729-699-51 s	TRANSISTOR 2SA995-F
Q15	8-729-658-32 s	TRANSISTOR 2SC1583
Q16	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q17	8-729-105-88 s	TRANSISTOR 2SC2570A
Q18	8-729-105-88 s	TRANSISTOR 2SC2570A
Q19	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q20	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q21	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q22	8-729-119-76 s	TRANSISTOR 2SA1115P
Q23	8-729-119-76 s	TRANSISTOR 2SA1115P
Q24	8-729-119-76 s	TRANSISTOR 2SA1115P
Q25	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q26	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q27	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q28	8-729-119-76 s	TRANSISTOR 2SA1115P
Q29	8-729-119-76 s	TRANSISTOR 2SA1115P
Q30	8-729-119-76 s	TRANSISTOR 2SA1115P
Q33	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q34	8-729-119-76 s	TRANSISTOR 2SA1115P
Q35	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q36	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q37	8-729-119-76 s	TRANSISTOR 2SA1115P
Q38	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q39	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q40	8-729-800-43 s	TRANSISTOR 2SK152-3
Q41	8-729-800-43 s	TRANSISTOR 2SK152-3
Q42	8-729-119-76 s	TRANSISTOR 2SA1115P

(DA-33 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q43	8-729-119-76 s	TRANSISTOR 2SA1115P
Q44	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q45	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q46	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q47	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q48	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q49	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q50	8-729-119-76 s	TRANSISTOR 2SA1115P
Q51	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q52	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q53	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q54	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q55	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q56	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q57	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q58	8-729-119-76 s	TRANSISTOR 2SA1115P
Q59	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q60	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q61	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q62	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q63	8-729-119-76 s	TRANSISTOR 2SA1115P
Q64	8-729-800-43 s	TRANSISTOR 2SK152-3
Q65	8-729-800-43 s	TRANSISTOR 2SK152-3
Q66	8-729-119-76 s	TRANSISTOR 2SA1115P
Q67	8-729-699-51 s	TRANSISTOR 2SA995-F
Q68	8-729-658-32 s	TRANSISTOR 2SC1583
Q69	8-729-105-47 s	TRANSISTOR 2SC2026-L
Q70	8-729-105-47 s	TRANSISTOR 2SC2026-L
Q71	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q72	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q73	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q74	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q75	8-729-119-78 s	TRANSISTOR 2SC2603-E
Q76	8-729-119-76 s	TRANSISTOR 2SA1115P
R1	1-215-459-00 s	METAL 39K 1% 1/6W
R8	1-215-439-00 s	METAL 5.6K 1% 1/6W
R35	1-215-882-00 s	METAL 22 5% 2W
R40	1-216-377-11 s	METAL 4.7 5% 2W
R41	1-216-379-11 s	METAL 6.8 5% 2W
R59	1-215-429-00 s	METAL 2.2K 1% 1/6W
R61	1-215-423-00 s	METAL 1.2K 1% 1/6W
R64	1-215-461-00 s	METAL 47K 1% 1/6W
R67	1-215-433-00 s	METAL 3.3K 1% 1/6W
R68	1-215-439-00 s	METAL 5.6K 1% 1/6W
R125	1-247-804-11 s	CARBON 75 5% 1/4W
R126	1-247-804-11 s	CARBON 75 5% 1/4W
R136	1-215-469-00 s	METAL 100K 1% 1/6W
R182	1-215-445-00 s	METAL 10K 1% 1/6W
R183	1-215-445-00 s	METAL 10K 1% 1/6W
R184	1-215-421-00 s	METAL 1K 1% 1/6W
R185	1-215-421-00 s	METAL 1K 1% 1/6W
R191	1-215-397-00 s	METAL 100 1% 1/6W
R216	1-215-397-00 s	METAL 100 1% 1/6W
R262	1-247-804-11 s	CARBON 75 5% 1/4W
R275	1-247-804-11 s	CARBON 75 5% 1/4W
R282	1-247-804-11 s	CARBON 75 5% 1/4W
R289	1-247-804-11 s	CARBON 75 5% 1/4W
RB1	1-235-528-12 s	COMPOSITION CIRCUIT BLOCK

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

(DA-33 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
RB2	1-235-526-11	s COMPOSITION CIRCUIT BLOCK
RB3	1-235-527-11	s COMPOSITION CIRCUIT BLOCK
RB4	1-235-128-00	s RES BLOCK 1.5K
RV1	1-230-523-11	s RES. ADJ. METAL 10K
RV2	1-230-521-11	s RES. ADJ. METAL 2.2K
RV3	1-230-521-11	s RES. ADJ. METAL 2.2K
RV4	1-230-519-11	s RES. ADJ. METAL 470
RV5	1-230-523-11	s RES. ADJ. METAL 10K
RV6	1-230-521-11	s RES. ADJ. METAL 2.2K
RV7	1-230-522-11	s RES. ADJ. METAL 4.7K
RV8	1-230-521-11	s RES. ADJ. METAL 2.2K
RV9	1-230-522-11	s RES. ADJ. METAL 4.7K
RV10	1-230-530-11	s RES. ADJ. METAL GLAZE 100
RV11	1-230-520-11	s RES. ADJ. METAL 1K
RV12	1-230-520-11	s RES. ADJ. METAL 1K
RV13	1-230-522-11	s RES. ADJ. METAL 4.7K
RV14	1-230-521-11	s RES. ADJ. METAL 2.2K
RV15	1-230-519-11	s RES. ADJ. METAL 470
RV16	1-230-520-11	s RES. ADJ. METAL 1K
RV17	1-230-522-11	s RES. ADJ. METAL 4.7K
RV18	1-230-524-11	s RES. ADJ. METAL 22K
RV19	1-230-520-11	s RES. ADJ. METAL 1K
RV20	1-230-522-11	s RES. ADJ. METAL 4.7K
RV21	1-230-519-11	s RES. ADJ. METAL 470
RV23	1-228-455-00	s RES. ADJ. METAL 500
RV25	1-230-520-11	s RES. ADJ. METAL 1K
RV26	1-230-521-11	s RES. ADJ. METAL 2.2K
RV27	1-230-521-11	s RES. ADJ. METAL 2.2K
RV28	1-230-524-11	s RES. ADJ. METAL 22K
RV29	1-230-521-11	s RES. ADJ. METAL 2.2K
X1	1-527-723-00	s VIBRATOR, CRYSTAL
X2	1-567-504-11	s OSCILLATOR, CRYSTAL

DUS-311 BOARD

Ref. No. or Q'ty	Part No.	SP Description
		All of component parts on the DUS-311 board are supplied together when you order the AD-44P board.
1pc	1-632-547-11	s PRINTED CIRCUIT BOARD, DUS-311
C1	1-124-589-11	s ELECT 47uF 20% 16V
C2	1-161-051-00	s CERAMIC 0.01uF 10% 25V
C3	1-130-487-00	s MYLAR 0.022uF 5% 50V
C4	1-130-487-00	s MYLAR 0.022uF 5% 50V
IC1	8-759-907-81	s IC SN74LS221NS
IC2	8-759-922-49	s IC SN74LS74ANS
IC3	8-759-922-49	s IC SN74LS74ANS
IC4	8-759-922-49	s IC SN74LS74ANS
L1	1-410-470-11	s INDUCTOR 10uH
RV1	1-228-459-00	s RES. ADJ. CERMET 10K
RV2	1-228-459-00	s RES. ADJ. CERMET 10K

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

KY-163 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-6259-369-A	o MOUNTED CIRCUIT BAORD, KY-163
1pc	3-667-612-01	o HEAT SINK
2pcs	7-621-772-68	s SCREW +B 2X12
1pc	7-621-775-50	s SCREW +B 2.6X10
2pcs	7-622-205-05	s NUT M2 TYPE2
2pcs	7-622-207-05	s N 2.6, TYPE 2
1pc	7-682-548-09	s SCREW +B 3X8
1pc	7-682-947-01	s SCREW +PSW 3X6
1pc	7-682-948-01	s SCREW +PSW 3X8
4pcs	7-688-001-02	s W 2. SMALL
BZ1	1-529-055-11	s BUZZER
C1	1-161-494-00	s CERAMIC 0.022uF 25V
C2	1-161-494-00	s CERAMIC 0.022uF 25V
C3	1-161-494-00	s CERAMIC 0.022uF 25V
C4	1-161-494-00	s CERAMIC 0.022uF 25V
C5	1-161-494-00	s CERAMIC 0.022uF 25V
C6	1-161-494-00	s CERAMIC 0.022uF 25V
C7	1-161-494-00	s CERAMIC 0.022uF 25V
C8	1-161-494-00	s CERAMIC 0.022uF 25V
C9	1-161-494-00	s CERAMIC 0.022uF 25V
C10	1-161-494-00	s CERAMIC 0.022uF 25V
C11	1-161-494-00	s CERAMIC 0.022uF 25V
C12	1-161-494-00	s CERAMIC 0.022uF 25V
C13	1-161-494-00	s CERAMIC 0.022uF 25V
C14	1-161-494-00	s CERAMIC 0.022uF 25V
C15	1-161-494-00	s CERAMIC 0.022uF 25V
C16	1-161-494-00	s CERAMIC 0.022uF 25V
C17	1-161-494-00	s CERAMIC 0.022uF 25V
C18	1-161-494-00	s CERAMIC 0.022uF 25V
C19	1-161-494-00	s CERAMIC 0.022uF 25V
C20	1-161-494-00	s CERAMIC 0.022uF 25V
C21	1-161-494-00	s CERAMIC 0.022uF 25V
C22	1-161-494-00	s CERAMIC 0.022uF 25V
C23	1-161-494-00	s CERAMIC 0.022uF 25V
C24	1-161-494-00	s CERAMIC 0.022uF 25V
C26	1-161-494-00	s CERAMIC 0.022uF 25V
C27	1-161-494-00	s CERAMIC 0.022uF 25V
C28	1-161-494-00	s CERAMIC 0.022uF 25V
C29	1-161-494-00	s CERAMIC 0.022uF 25V
C30	1-161-494-00	s CERAMIC 0.022uF 25V
C31	1-161-494-00	s CERAMIC 0.022uF 25V
C32	1-161-494-00	s CERAMIC 0.022uF 25V
C33	1-161-494-00	s CERAMIC 0.022uF 25V
C34	1-161-494-00	s CERAMIC 0.022uF 25V
C35	1-161-494-00	s CERAMIC 0.022uF 25V
C36	1-161-494-00	s CERAMIC 0.022uF 25V
C38	1-161-494-00	s CERAMIC 0.022uF 25V
C39	1-161-494-00	s CERAMIC 0.022uF 25V
C40	1-161-494-00	s CERAMIC 0.022uF 25V
C41	1-161-494-00	s CERAMIC 0.022uF 25V
C42	1-161-494-00	s CERAMIC 0.022uF 25V
C43	1-161-494-00	s CERAMIC 0.022uF 25V
C44	1-161-494-00	s CERAMIC 0.022uF 25V
C45	1-161-494-00	s CERAMIC 0.022uF 25V
C46	1-161-494-00	s CERAMIC 0.022uF 25V
C47	1-161-494-00	s CERAMIC 0.022uF 25V
C49	1-161-494-00	s CERAMIC 0.022uF 25V
C50	1-161-494-00	s CERAMIC 0.022uF 25V

(KY-163 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C52	1-161-494-00	s CERAMIC 0.022uF 25V
C54	1-161-494-00	s CERAMIC 0.022uF 25V
C56	1-161-494-00	s CERAMIC 0.022uF 25V
C57	1-161-494-00	s CERAMIC 0.022uF 25V
C59	1-161-374-11	s CERAMIC 0.0015uF 20% 50V
CN1	1-506-694-11	o HEADER 26P
D1	8-719-906-41	s DIODE GL-9D03D
D2	8-719-906-41	s DIODE GL-9D03D
D3	8-719-906-41	s DIODE GL-9D03D
D4	8-719-906-41	s DIODE GL-9D03D
D5	8-719-109-84	s DIODE RD5.1ES-T1B1
D6	8-719-933-24	s DIODE LT-9230N2
D7	8-719-933-24	s DIODE LT-9230N2
D8	8-719-911-19	s DIODE ISS119
IC2	8-759-922-49	s IC SN74LS74ANS
IC3	8-759-929-86	s IC SN74LS14NS
IC4	8-752-800-46	s IC CXQ70108P-8
IC5	8-759-205-31	s IC TC74HC373F
IC6	8-759-205-31	s IC TC74HC373F
IC7	8-759-926-49	s IC SN74HC245NS
IC8	8-759-926-11	s IC SN74HC138NS
IC9	8-759-733-40	s IC 27C64G-NPKY9V101
IC10	8-752-323-64	s IC CXK5816M-12L
IC11	8-752-806-91	s IC CXQ71054P
IC12	8-759-107-51	s IC CXQ71051P
IC13	8-759-926-31	s IC AM26LS31PC
IC14	8-759-926-32	s IC AM26LS32PC
IC15	8-759-926-48	s IC SN74HC244NS
IC16	8-759-926-11	s IC SN74HC138NS
IC17	8-759-926-67	s IC SN74HC374NS
IC18	8-759-926-11	s IC SN74HC138NS
IC19	8-759-926-67	s IC SN74HC374NS
IC20	8-759-926-11	s IC SN74HC138NS
IC21	8-759-926-11	s IC SN74HC138NS
IC22	8-759-926-67	s IC SN74HC374NS
IC23	8-759-926-67	s IC SN74HC374NS
IC24	8-759-926-67	s IC SN74HC374NS
IC26	8-759-926-67	s IC SN74HC374NS
IC27	8-759-930-77	s IC SN74LS247NS
IC28	8-759-930-77	s IC SN74LS247NS
IC29	8-759-926-11	s IC SN74HC138NS
IC30	8-759-926-48	s IC SN74HC244NS
IC31	8-759-903-48	s IC SN74LS348N
IC32	8-759-926-48	s IC SN74HC244NS
IC33	8-759-903-48	s IC SN74LS348N
IC34	8-759-903-48	s IC SN74LS348N
IC35	8-759-926-48	s IC SN74HC244NS
IC36	8-759-926-48	s IC SN74HC244NS
IC37	8-749-920-71	s IC SI-3052V
IC38	8-759-927-46	s IC SN74HC00NS
IC39	8-759-973-72	s IC SN74LS07NS
IC40	8-759-973-72	s IC SN74LS07NS
IC41	8-759-973-72	s IC SN74LS07NS
IC42	8-759-973-72	s IC SN74LS07NS
IC43	8-759-973-72	s IC SN74LS07NS
IC44	8-759-973-72	s IC SN74LS07NS
IC45	8-759-973-72	s IC SN74LS07NS
IC46	8-759-973-72	s IC SN74LS07NS

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

(KY-163 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
IC47	8-759-930-77	s IC SN74LS247NS
IC49	8-759-941-17	s IC SN74LS06NS
IC50	8-759-941-17	s IC SN74LS06NS
IC51	8-759-970-26	s IC PST523C
L1	1-459-106-00	s COIL 820uH
R68	1-216-398-11	s METAL 5.6 5% 3W
R69	1-216-398-11	s METAL 5.6 5% 3W
R71	1-247-903-00	s CARBON 1M 5% 1/4W
RB1	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB2	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB3	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB4	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB5	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB6	1-231-410-00	s RESISTOR BLOCK 10Kx8
S1	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S2	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S3	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S4	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S5	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S6	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S7	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S8	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S9	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S10	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S11	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S12	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S13	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S14	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S15	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S16	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S17	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S18	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S19	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S20	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S21	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S22	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S23	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S24	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S25	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S26	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S27	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S28	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S29	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S30	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S31	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S32	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S33	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S34	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S35	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S36	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S37	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S38	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S39	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S61	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S62	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S64	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S65	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)

(KY-163 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
S66	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S67	1-571-505-11	s SWITCH, KEY BOARD (WITH LED)
S68	1-554-481-00	s SWITCH, SLIDE
S70	1-553-219-00	s SWITCH, PUSH
X1	1-567-150-00	s OSCILLATOR, CRYSTAL

LE-55 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-620-338-11	o PRINTED CIRCUIT BOARD, LE-55
4pcs	3-674-390-00	o HOLDER (B), LED
CN1	1-506-482-11	s CONNECTOR, 3P, MALE
D1	8-719-812-32	s DIODE TLY123
D2	8-719-812-32	s DIODE TLY123
D3	8-719-812-32	s DIODE TLY123
D4	8-719-812-32	s DIODE TLY123

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

MB-249 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-6265-119-A	o MOUNTED CIRCUIT BOARD, MB-249
28pcs	7-685-871-09	s SCREW +BVT 3X6 (S)
CN1	1-563-336-11	o HOUSING, 64P
CN2	1-508-900-00	s CONNECTOR (M) 2P
CN3	1-563-336-11	o HOUSING, 64P
CN4	1-563-336-11	o HOUSING, 64P
CN5	1-563-336-11	o HOUSING, 64P
CN6	1-563-336-11	o HOUSING, 64P
CN7	1-563-336-11	o HOUSING, 64P
CN8	1-563-336-11	o HOUSING, 64P
CN9	1-563-336-11	o HOUSING, 64P
CN10	1-563-336-11	o HOUSING, 64P
CN11	1-563-336-11	o HOUSING, 64P
CN12	1-563-336-11	o HOUSING, 64P
CN13	1-563-336-11	o HOUSING, 64P
CN14	1-563-336-11	o HOUSING, 64P
CN15	1-563-336-11	o HOUSING, 64P
CN16	1-566-311-11	s CONNECTOR, 10P, MALE
CN17	1-565-845-11	o CONNECTOR, 26P, MALE
CN18	1-564-241-00	o CONNECTOR, 4P, MALE
CN19	1-564-243-00	o PIN, CONNECTOR 6P
CN20	1-564-242-00	o PIN, CONNECTOR 5P
CN21	1-506-471-11	s CONNECTOR, 6P, MALE
CN22	1-506-469-11	s CONNECTOR, 4P, MALE
CN23	1-506-471-11	o CONNECTOR, 6P, MALE
CN24	1-506-471-11	o CONNECTOR, 6P, MALE
CN26	1-506-471-11	o CONNECTOR, 6P, MALE
CN27	1-506-473-11	s CONNECTOR, 8P, MALE
L1	1-421-541-00	s COIL, CHOKE 1000UH

MY-41 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-6259-382-A	o MOUNTED CIRCUIT BOARD, MY-41P
1pc	2-139-140-01	o PLATE, SHIELD
2pcs	2-182-909-01	o LEVER, PC BOARD
2pcs	7-626-320-11	o PIN, SPRING 3X8
7pcs	7-682-947-01	s SCREW +PSW 3X6
6pcs	7-685-546-19	s SCREW +BTP 3X8 TYPE2 N-S
C202	1-124-584-00	s ELECT 100uF 20% 10V
C203	1-124-584-00	s ELECT 100uF 20% 10V
C204	1-124-584-00	s ELECT 100uF 20% 10V
C205	1-124-584-00	s ELECT 100uF 20% 10V
C206	1-124-584-00	s ELECT 100uF 20% 10V
C207	1-124-584-00	s ELECT 100uF 20% 10V
C208	1-124-584-00	s ELECT 100uF 20% 10V
CN7	1-506-747-11	s CONNECTOR, DIN 64P, MALE
CN8	1-506-747-11	s CONNECTOR, DIN 64P, MALE
CN9	1-506-747-11	s CONNECTOR, DIN 64P, MALE
IC1	8-759-989-55	s IC SN74ALS244BN
IC2	8-759-902-44	s IC SN74LS244N
IC3	8-759-902-44	s IC SN74LS244N
IC4	8-759-902-44	s IC SN74LS244N
IC5	8-759-902-44	s IC SN74LS244N
IC6	8-759-902-44	s IC SN74LS244N
IC7	8-759-902-44	s IC SN74LS244N
IC8	8-759-902-44	s IC SN74LS244N
IC9	8-759-902-44	s IC SN74LS244N
IC10	8-759-902-44	s IC SN74LS244N
IC11	8-759-902-44	s IC SN74LS244N
IC12	8-759-902-44	s IC SN74LS244N
IC13	8-759-913-63	s IC SN74ALS374N
IC14	8-759-913-63	s IC SN74ALS374N
IC15	8-759-913-63	s IC SN74ALS374N
IC16	8-759-913-63	s IC SN74ALS374N
IC17	8-759-901-74	s IC SN74LS174N
IC18	8-759-938-92	s IC 74F151APC
IC19	8-759-938-92	s IC 74F151APC
IC20	8-759-144-78	s IC UPD43256AGU-10LL
IC21	8-752-328-19	s IC CXK5864BM-10L
IC22	8-759-144-78	s IC UPD43256AGU-10LL
IC23	8-752-328-19	s IC CXK5864BM-10L
IC24	8-759-901-38	s IC SN74LS138N
IC25	8-759-901-07	s IC SN74LS107AN
IC26	8-759-900-08	s IC SN74LS08N
IC27	8-759-900-74	s IC SN74LS74AN
IC28	8-759-903-74	s IC SN74LS374N
IC29	8-759-900-74	s IC SN74LS74AN
IC30	8-759-901-53	s IC SN74LS153N
IC31	8-759-901-53	s IC SN74LS153N
IC32	8-759-900-32	s IC SN74LS32N
IC33	8-759-901-74	s IC SN74LS174N
IC34	8-759-900-04	s IC SN74LS04N
IC35	8-759-902-44	s IC SN74LS244N
IC36	8-759-903-74	s IC SN74LS374N
IC37	8-759-903-74	s IC SN74LS374N
IC38	8-759-903-74	s IC SN74LS374N
IC39	8-759-903-74	s IC SN74LS374N
IC40	8-759-903-74	s IC SN74LS374N
IC41	8-759-903-74	s IC SN74LS374N

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

(MY-41 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
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IC42	8-759-901-61	s IC	SN74LS161AN
IC43	8-759-901-61	s IC	SN74LS161AN
IC44	8-759-901-61	s IC	SN74LS161AN
IC45	8-759-901-61	s IC	SN74LS161AN
IC46	8-759-901-61	s IC	SN74LS161AN

IC47	8-759-901-61	s IC	SN74LS161AN
IC48	8-759-900-32	s IC	SN74LS32N
IC49	8-759-900-02	s IC	SN74LS02N
IC50	8-759-902-44	s IC	SN74LS244N
IC51	8-759-901-39	s IC	SN74LS139N

IC52	8-759-903-74	s IC	SN74LS374N
IC53	8-759-903-74	s IC	SN74LS374N
IC54	8-759-903-74	s IC	SN74LS374N
IC55	8-759-903-74	s IC	SN74LS374N
IC56	8-759-903-74	s IC	SN74LS374N

IC57	8-759-903-74	s IC	SN74LS374N
IC58	8-759-903-74	s IC	SN74LS374N
IC59	8-759-903-74	s IC	SN74LS374N
IC60	8-759-903-74	s IC	SN74LS374N
IC61	8-759-903-74	s IC	SN74LS374N

IC62	8-759-903-74	s IC	SN74LS374N
IC63	8-759-903-74	s IC	SN74LS374N
IC65	8-759-144-78	s IC	UPD43256AGU-10LL
IC66	8-759-144-78	s IC	UPD43256AGU-10LL
IC67	8-759-144-78	s IC	UPD43256AGU-10LL

IC68	8-759-144-78	s IC	UPD43256AGU-10LL
IC69	8-759-144-78	s IC	UPD43256AGU-10LL
IC70	8-759-144-78	s IC	UPD43256AGU-10LL
IC71	8-759-144-78	s IC	UPD43256AGU-10LL
IC72	8-759-144-78	s IC	UPD43256AGU-10LL

IC73	8-759-144-78	s IC	UPD43256AGU-10LL
IC74	8-759-144-78	s IC	UPD43256AGU-10LL
IC75	8-759-144-78	s IC	UPD43256AGU-10LL
IC76	8-759-144-78	s IC	UPD43256AGU-10LL
IC77	8-759-144-78	s IC	UPD43256AGU-10LL

IC78	8-759-144-78	s IC	UPD43256AGU-10LL
IC79	8-759-144-78	s IC	UPD43256AGU-10LL
IC80	8-759-144-78	s IC	UPD43256AGU-10LL
IC81	8-759-144-78	s IC	UPD43256AGU-10LL
IC82	8-759-144-78	s IC	UPD43256AGU-10LL

IC83	8-759-144-78	s IC	UPD43256AGU-10LL
IC84	8-759-144-78	s IC	UPD43256AGU-10LL
IC85	8-759-144-78	s IC	UPD43256AGU-10LL
IC86	8-759-144-78	s IC	UPD43256AGU-10LL
IC87	8-759-144-78	s IC	UPD43256AGU-10LL

IC88	8-759-144-78	s IC	UPD43256AGU-10LL
IC89	8-759-983-22	s IC	CXD8035Q
IC90	8-759-900-02	s IC	SN74LS02N
IC91	8-759-900-02	s IC	SN74LS02N
IC92	8-759-901-64	s IC	SN74LS164N

IC93	8-759-903-74	s IC	SN74LS374N
IC94	8-759-902-44	s IC	SN74LS244N
IC95	8-759-902-44	s IC	SN74LS244N
IC96	8-759-902-44	s IC	SN74LS244N
IC97	8-759-900-74	s IC	SN74LS74AN

IC98	8-759-900-00	s IC	SN74LS00N
IC99	8-759-913-63	s IC	SN74ALS374N
IC100	8-759-913-63	s IC	SN74ALS374N
IC101	8-759-913-63	s IC	SN74ALS374N

(MY-41 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
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L1	1-421-329-00	s	COIL, CHOKE
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Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

PU-69 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-6259-367-A	o MOUNTED CIRCUIT BOARD, PU-69
1pc	2-139-140-01	o PLATE, SHIELD
2pcs	2-182-909-01	o LEVER, PC BOARD
2pcs	7-626-320-11	o PIN, SPRING 3X8
1pc	7-682-947-01	s SCREW +PSW 3X6
6pcs	7-685-546-19	s SCREW +BTP 3X8 TYPE2 N-S
C64	1-124-584-00	s ELECT 100uF 20% 10V
C65	1-124-584-00	s ELECT 100uF 20% 10V
C67	1-124-584-00	s ELECT 100uF 20% 10V
C68	1-124-584-00	s ELECT 100uF 20% 10V
C69	1-124-584-00	s ELECT 100uF 20% 10V
C70	1-124-584-00	s ELECT 100uF 20% 10V
C71	1-124-584-00	s ELECT 100uF 20% 10V
CN4	1-506-747-11	s CONNECTOR, DIN 64P, MALE
CN5	1-506-747-11	s CONNECTOR, DIN 64P, MALE
CN6	1-506-747-11	s CONNECTOR, DIN 64P, MALE
CNI56	1-540-080-11	s SOCKET, IC (IC113) 68P
IC1	8-759-989-55	s IC SN74ALS244BN
IC2	8-759-902-44	s IC SN74LS244N
IC3	8-759-902-44	s IC SN74LS244N
IC4	8-759-902-44	s IC SN74LS244N
IC5	8-759-902-44	s IC SN74LS244N
IC6	8-759-901-38	s IC SN74LS138N
IC7	8-759-901-38	s IC SN74LS138N
IC8	8-759-901-75	s IC SN74LS175N
IC9	8-759-983-24	s IC CXD8033Q
IC10	8-759-901-75	s IC SN74LS175N
IC11	8-759-945-73	s IC SN74ALS10AN
IC12	8-759-900-67	s IC SN74ALS02N
IC13	8-759-904-38	s IC SN74ALS32N
IC14	8-759-904-26	s IC SN74ALS08N
IC15	8-759-904-18	s IC SN74ALS00AN
IC16	8-759-946-64	s IC SN74ALS04BN
IC17	8-759-903-74	s IC SN74LS374N
IC18	8-759-903-74	s IC SN74LS374N
IC19	8-759-903-77	s IC SN74LS377N
IC20	8-759-901-57	s IC SN74LS157N
IC21	8-759-901-57	s IC SN74LS157N
IC22	8-759-901-57	s IC SN74LS157N
IC23	8-759-901-57	s IC SN74LS157N
IC24	8-759-903-77	s IC SN74LS377N
IC25	8-759-901-57	s IC SN74LS157N
IC26	8-759-901-57	s IC SN74LS157N
IC27	8-759-901-57	s IC SN74LS157N
IC28	8-752-322-06	s IC CXK5814P-35
IC29	8-752-322-06	s IC CXK5814P-35
IC30	8-759-902-44	s IC SN74LS244N
IC31	8-759-902-44	s IC SN74LS244N
IC32	8-759-901-61	s IC SN74LS161AN
IC33	8-759-901-61	s IC SN74LS161AN
IC34	8-759-903-77	s IC SN74LS377N
IC35	8-759-901-61	s IC SN74LS161AN
IC36	8-759-901-61	s IC SN74LS161AN
IC37	8-759-903-77	s IC SN74LS377N
IC38	8-759-903-74	s IC SN74LS374N
IC39	8-759-983-25	s IC CXD8031Q
IC40	8-759-983-25	s IC CXD8031Q

(PU-69 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
IC41	8-759-913-63	s IC SN74ALS374N
IC42	8-759-913-63	s IC SN74ALS374N
IC43	8-759-902-44	s IC SN74LS244N
IC44	8-752-322-06	s IC CXK5814P-35
IC45	8-759-983-25	s IC CXD8031Q
IC46	8-759-925-08	s IC SN74ALS174N
IC47	8-759-902-44	s IC SN74LS244N
IC48	8-759-902-44	s IC SN74LS244N
IC49	8-759-902-44	s IC SN74LS244N
IC50	8-759-902-44	s IC SN74LS244N
IC51	8-759-902-44	s IC SN74LS244N
IC52	8-752-328-21	s IC CXK5864BM-70L
IC53	8-752-328-21	s IC CXK5864BM-70L
IC54	8-759-913-63	s IC SN74ALS374N
IC55	8-759-913-63	s IC SN74ALS374N
IC56	8-759-990-53	s IC WS59510-50J
IC57	8-759-983-23	s IC CXD8032Q
IC58	8-759-917-85	s IC 74F378PC
IC59	8-759-917-85	s IC 74F378PC
IC60	8-759-917-85	s IC 74F378PC
IC61	8-759-917-85	s IC 74F378PC
IC62	8-759-990-59	s IC N74F377N
IC63	8-759-904-26	s IC SN74ALS08N
L1	1-421-329-00	s COIL, CHOKE
RB1	1-231-405-00	s RESISTOR BLOCK 1K

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

SY-146 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-6259-381-A	o MOUNTED CIRCUIT BOARD, SY-146P
1pc	2-139-140-01	o PLATE, SHIELD
2pcs	2-182-909-01	o LEVER, PC BOARD
2pcs	7-626-320-11	o PIN, SPRING 3X8
7pcs	7-682-947-01	s SCREW +PSW 3X6
4pcs	7-685-546-19	s SCREW +BTP 3X8 TYPE2 N-S
C58	1-124-465-00	s ELECT 0.47uF 20% 50V
C101	1-162-290-31	s CERAMIC 470PF 10% 50V
CN1	1-506-747-11	s CONNECTOR, DIN 64P, MALE
CN3	1-506-747-11	s CONNECTOR, DIN 64P, MALE
D1	8-719-911-19	s DIODE 1SS119
IC2	8-759-900-14	s IC SN74LS14N
IC3	8-752-800-48	s IC CXQ70116P-8
IC4	8-759-903-75	s IC SN74LS375N
IC5	8-759-903-73	s IC SN74LS373N
IC6	8-759-903-73	s IC SN74LS373N
IC7	8-759-902-45	s IC SN74LS245N
IC8	8-759-902-45	s IC SN74LS245N
IC9	8-759-900-10	s IC SN74LS10N
IC10	8-759-901-39	s IC SN74LS139N
IC11	8-759-901-38	s IC SN74LS138N
IC12	8-752-806-91	s IC CXQ71054P
IC13	8-759-107-51	s IC CXQ71051P
IC14	8-759-107-51	s IC CXQ71051P
IC15	8-759-902-44	s IC SN74LS244N
IC16	8-759-902-44	s IC SN74LS244N
IC17	8-759-900-32	s IC SN74LS32N
IC18	8-759-900-11	s IC SN74LS11N
IC20	8-752-328-02	s IC CXK5864BSP-10L
IC21	8-752-328-02	s IC CXK5864BSP-10L
IC22	8-759-715-49	s IC 27C256A-PALSY22 V210
IC23	8-759-715-50	s IC 27C256A-PALSY23 V210
IC24	8-759-733-45	s IC 27C301G-PALEFF24 V202
IC25	8-759-733-46	s IC 27C301G-PALEFF25 V202
IC26	8-759-733-47	s IC 27C301G-PALEFF26 V202
IC27	8-759-733-48	s IC 27C301G-PALEFF27 V202
IC32	8-759-902-45	s IC SN74LS245N
IC33	8-759-901-38	s IC SN74LS138N
IC34	8-759-903-74	s IC SN74LS374N
IC35	8-759-903-74	s IC SN74LS374N
IC36	8-759-903-74	s IC SN74LS374N
IC37	8-759-901-75	s IC SN74LS175N
IC38	8-759-903-74	s IC SN74LS374N
IC39	8-759-901-75	s IC SN74LS175N
IC40	8-759-900-74	s IC SN74LS74AN
IC41	8-759-901-38	s IC SN74LS138N
IC42	8-759-902-44	s IC SN74LS244N
IC43	8-759-902-44	s IC SN74LS244N
IC44	8-752-323-26	s IC CXK1009P
IC45	8-759-902-44	s IC SN74LS244N
IC46	8-759-902-44	s IC SN74LS244N
IC47	8-759-902-44	s IC SN74LS244N
IC48	8-759-902-44	s IC SN74LS244N
IC49	8-759-900-32	s IC SN74LS32N
IC50	8-759-902-44	s IC SN74LS244N
IC51	8-759-902-44	s IC SN74LS244N

(SY-146 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
IC52	8-759-926-31	s IC AM26LS31PC
IC53	8-759-926-32	s IC AM26LS32PC
IC54	8-759-902-44	s IC SN74LS244N
IC55	8-759-970-26	s IC PST523C
L1	1-421-329-00	s COIL, CHOKE
R2	1-247-883-00	s CARBON 150K 5% 1/4W
RB1	1-235-351-11	s BLOCK, RESISTOR 2.2KX4
RB2	1-235-351-11	s BLOCK, RESISTOR 2.2KX4
S1	1-554-027-00	s SWITCH, DIGITAL
S2	1-570-223-11	s SWITCH, SLIDE
X1	1-567-150-00	s OSCILLATOR, CRYSTAL

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

FRAME

Ref. No. or Q'ty	Part No.	SP Description
1pc	Δ1-413-466-22	s REGULATOR, SWITCHING (POWER SUPPLY)
1pc	Δ1-532-531-11	s BREAKER, CIRCUIT
1pc	1-541-524-11	s MOTOR, DC FAN
1pc	Δ1-560-222-11	s INLET 3P
1pc	1-563-848-21	s SOCKET, D-SUB CONNECTOR 25P
1pc	Δ1-570-117-11	s SWITCH, SEESAW (AC POWER)
1pc	1-574-990-11	s WIRE ASSY, FLAT TYPE (9 CORE)
1pc	1-574-991-11	s WIRE ASSY, FLAT TYPE (25 CORE)
1pc	1-574-992-11	s WIRE ASSY, FLAT TYPE (25 CORE)
CN1	1-562-820-11	o HOUSING, CONNECTOR 5P (TO POWER SUPPLY)
CN1	1-562-148-11	o HOUSING, CONNECTOR 3P (TO LE-55 BOARD)
CN1	1-564-026-00	o CONTACT, RECEPTACLE
	1-562-151-11	o HOUSING, CONNECTOR 6P (TO CN-231 BOARD)
CN6	1-564-026-00	o CONTACT, RECEPTACLE
	1-562-824-11	o HOUSING, CONNECTOR 10P
CN7	1-562-210-11	o CONTACT, CONNECTOR
	1-562-819-11	o HOUSING, CONNECTOR 4P
CN8	1-562-210-11	o CONTACT, CONNECTOR
	1-562-819-11	o HOUSING, CONNECTOR 4P
CN9	1-564-026-00	o CONTACT, RECEPTACLE
	1-562-818-11	o HOUSING, CONNECTOR 3P
CN11	1-562-210-11	o CONTACT, CONNECTOR
	1-563-846-21	s SOCKET, D-SUB CONNECTOR 9P (SWITCHER/EDITOR)
CN12	1-563-848-21	s SOCKET, D-SUB CONNECTOR 25P (CONTROL PANEL)
CN13	1-563-354-31	s CONNECTOR, BNC (KEY OUT)
CN14	1-563-354-31	s CONNECTOR, BNC (PGM OUT 1)
CN15	1-563-354-31	s CONNECTOR, BNC (PGM OUT 2)
CN16	1-563-354-31	s CONNECTOR, BNC (T2)
CN17	1-563-354-31	s CONNECTOR, BNC (T1/CUE)
CN18	1-562-285-11	o HOUSING, CONNECTOR 4P
	1-562-210-11	o CONTACT, CONNECTOR
CN19	1-562-287-11	o HOUSING, CONNECTOR 6P
	1-562-210-11	o CONTACT, CONNECTOR
CN20	1-562-286-11	o HOUSING, CONNECTOR 5P
	1-562-210-11	o CONTACT, CONNECTOR
CN21	1-562-151-11	o HOUSING, CONNECTOR 6P
	1-564-026-00	o CONTACT, RECEPTACLE
CN22	1-562-149-11	o HOUSING, CONNECTOR 4P
	1-564-026-00	o CONTACT, RECEPTACLE
CN23	1-562-151-11	o HOUSING, CONNECTOR 6P
	1-564-026-00	o CONTACT, RECEPTACLE
CN24	1-562-151-11	o HOUSING, CONNECTOR 6P
	1-564-026-00	o CONTACT, RECEPTACLE
CN25	1-562-160-00	s CONNECTOR (R-F) 12P
	1-564-026-00	o CONTACT, RECEPTACLE
CN26	1-562-151-11	o HOUSING, CONNECTOR 6P
	1-564-026-00	o CONTACT, RECEPTACLE
CN27	1-562-153-11	o HOUSING, CONNECTOR 8P
	1-564-026-00	o CONTACT, RECEPTACLE
CN28	1-564-407-11	s CONNECTOR (R-M)
CN29	1-563-354-31	s CONNECTOR, BNC (VIDEO IN 1)
CN30	1-563-354-31	s CONNECTOR, BNC (VIDEO IN 2)
CN31	1-563-354-31	s CONNECTOR, BNC (VIDEO IN 3)
CN32	1-563-354-31	s CONNECTOR, BNC (SYNC OUT 1)
CN33	1-563-354-31	s CONNECTOR, BNC (SYNC OUT 2)
CN34	1-563-354-31	s CONNECTOR, BNC (SYNC OUT 3)

PACKING MATERIALS & SUPPLIED ACCESSORIES

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-6252-215-A	o INSTRUCTION ASSY
3pc	2-112-896-01	o TUBE, RUBBER
1pc	Δ1-556-760-11	s CORD, POWER (3CORE)
1pc	1-575-065-12	o CABLE ASSY (DIGITAL VIDEO)
1pc	2-990-242-01	o HOLDER (B), PLUG
1pc	3-750-914-41	s MANUAL, INSTRUCTION

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Part List".

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